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4   <u>ELECTRONIC BILL PRESENTMENT SYSTEM WITH CLIENT SPECIFIC</u>

5   <u>FORMATTING OF DATA</u>

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7   **BACKGROUND OF THE INVENTION**

8   The present invention relates to a financial transaction system and method, and

9   more particularly, to a network-based system and method for billing and payment.

10   Recently, there has been an increase in the popularity of performing financial

11   transactions using the Internet as a centralized network for linking the individual

12   financial systems of a plurality of entities transacting business with one another. With

13   the recent explosion in e-commerce, the increasing acceptance of the Internet as a

14   less expensive and more efficient way of doing business, and the advent of new server

15   technology and sophisticated online security systems, Internet-based financial

16   transactions are becoming ever more common. Advantageously, an Internet-based

17   financial transaction system for bill presentment and payment may reduce many of the

18   transaction costs associated with other financial transaction systems, such as

19   preparation costs, banking fees, and costs for clearing, reconciling and closing.

20   Moreover, such a transaction system may seamlessly handle transactions from

21   virtually any entity with Internet access, regardless of the nature of the business,

22   geographic location, size, or trading currency, even those entities for which the costs

23   of traditional invoicing, presentment and payment have traditionally been high.

24   Traditionally, invoice presentment and bill payment procedures have required a

25   capital outlay for the equipment to prepare and distribute each invoice, as well as

26   collect and reconcile payment of the invoice. Additionally, there are costs and

27   collection delays associated with the multiple steps required between multiple parties

28   to effect invoice presentment and bill payment. Such steps may include the payee's

29   preparation and distribution of invoices by mail (which may take up to a week to reach

30   payers) or electronically; one or more invoice approvals by individuals or departments

31   within the payer's organization (e.g. a purchasing manager); invoice adjustment or

1   dispute by other individuals or departments; payment authorizations by other

2   individuals or departments; payment issuance, either electronically or by issuance of a

3   paper instrument, such as a check, (again, typically by mail); receipt of payment at the

4   payee's side, either by the payee, the payee's bank, a lockbox, or other payment

5   receipt entity; and processing of the payment either at the payee's bank, at the

6   payee's accounts receivable, or both. This entire process may take several weeks,

7   and requires separate accounting records to be kept and harmonized at both the

8   payer's (accounts payable) and payee's (accounts receivable) sides, and/or within

9   other decentralized record keeping systems.

10   There are further costs and collection delays associated with any adjustments

11   to the invoice that may be made by either the payer or the payee. When an

12   adjustment is made within one record keeping system, the adjustment must be

13   communicated to the other system(s) so that a corresponding adjustment can be

14   made. For example, an invoice adjustment made by the payer results in the payer's

15   entry of an adjusted invoice amount into its accounts payable, as well as the payer's

16   mailing a copy of a manually-adjusted invoice to the payee, so that the payee can

17   update its accounts receivable.

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19   **SUMMARY OF THE INVENTION**

20   A first aspect of the present invention is to provide an electronic bill

21   presentment and payment system. The system comprises a billing database for

22   storing billing data related to a plurality of bills. Each bill represents an amount

23   payable to a billing client from a paying client. An application server receives a

24   plurality of instruction files, each representing a transaction for reading and

25   manipulating billing data, performs the transaction utilizing data included in the

26   instruction file, and provides a data response file complying with a predetermined

27   format. A presentation server is coupled to the application server and includes a

28   document database comprising a plurality of document style sheets. Each style sheet

29   represents a format for the response data in a predetermined document format

30   corresponding to one of the clients. The presentation server receives the response file

31   and generates a client document utilizing data extracted from the response file and the

1 document style sheet corresponding to the client. More specifically, the style sheet

2 utilized by the presentation server may be a style sheet associated with the billing

3 client associated with the transaction.

4   The document style sheet may include a plurality of document fields and the

5 presentation server may populate each document field by matching data from the data

6 response file to populate the document field. More specifically, the data response file

7 may comprise a plurality of data fields and a plurality of predetermined tags, each tag

8 identifying one of the plurality of data fields and the presentation server may utilize a

9 tag to identify data for inclusion in the client document. Further, one of the

10 predetermined tags may identify a data field which identifies the billing client

11 associated with the transaction and the presentation server may utilizes the data field

12 which identifies the billing client to select a document format for presenting the

13 response data to the client.

14 The data response file comprises an XML message and the client document may be

15 an HTML document.

16   In another aspect of the present invention, the presentation server may further

17 receive transaction request files from each of the biller clients and payor clients and

18 generate the instruction file in response thereto. The transaction request files from

19 each of the biller clients and the payor clients may be HTTP posts and the instruction

20 file may be an XML message.

21   Yet another aspect of the present invention is to provide a method of providing

22 electronic bill presentment and payment services to a plurality of billing clients and a

23 plurality of paying clients. The method comprises receiving an invoice file from each of

24 the plurality of billing clients and populating a billing database with data from each

25 invoice file. The invoice file representing amounts payable to the billing client from at

26 least one paying client. The method further comprises receiving an instruction file

27 from a client representing a transaction for reading or manipulating data in the billing

28 database, performing the transaction utilizing data included in the instruction file,

29 generating response data, and providing a client response document comprising the

30 response data in a specified document format corresponding to the client.

1   The specified document format may be defined by a style sheet which includes
2   a plurality of document fields and the step of providing the client response document
3   may comprise populating each document field by matching data from the response
4   data to a document field. More specifically, the response data may comprise a
5   plurality of data fields and a plurality of predetermined tags, each tag identifying one of
6   the plurality of data fields and the step of populating each document field comprises
7   matching the field to a tag identify data for inclusion within the document field.
8   Further, one of the predetermined tags may identify a data field which identifies
9   the billing client associated with the transaction and the step of providing a client
10   response document may comprise identifying the billing client and selecting a
11   document format associated with the billing client for providing the client response.
12   The response data may be formatted an XML message and the client response
13   document is an HTML document.
14
15   **BRIEF DESCRIPTION OF THE DRAWINGS**
16   Figure 1 is a block diagram of an electronic bill presentment and payment
17   system consistent with the present invention;
18   Figure 2 is a flowchart illustrating exemplary operation of a web server in
19   accordance with one embodiment of the invention;
20   Figure 3 is a flowchart illustrating exemplary operation of an application server
21   in accordance with one embodiment of the invention;
22   Figure 4 is a flowchart illustrating exemplary invoice loading in accordance with
23   one embodiment of the invention;
24   Figures 5a, 5b, and 5c [is a] are workflow diagrams illustrating exemplary host
25   user operations in one embodiment of the invention;
26   Figures 6a, 6b, and 6c [is a] are workflow diagrams illustrating exemplary biller
27   system operations in one embodiment of the invention;
28   Figures 7a, 7b, and 7c [is a] are workflow diagrams illustrating exemplary biller
29   system administration operations in one embodiment of the invention;
30   Figures 8a, 8b, and 8c [is a] are workflow diagrams illustrating exemplary payer
31   system operations in one embodiment of the invention;

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1   Figures 9a and 9b [is a] are workflow diagrams illustrating exemplary payer

2   system invoice/payment operations in one embodiment of the invention;

3   Figure 10 is a workflow diagram illustrating exemplary payer system reporting

4   operations in one embodiment of the invention; and

5   Figure 11 is a workflow diagram illustrating exemplary payer system

6   administration operations in one embodiment of the invention.

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8   **DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS**

9   **Exemplary Bill Presentment and Payment System**

10   Figure 1 illustrates an electronic bill presentment and payment system 10

11   consistent with the present invention. System 10 includes at least one biller system

12   12, at least one payer system 14, at least one business service provider system 16,

13   and a payment processing system ("ASP") 18, in communication with one another via

14   a network 20. The network 20 may be a TCP/IP compliant network, such as the

15   Internet. It should be appreciated that each of the biller system 12, payer system 14,

16   business service provider system 16 and ASP 18 (also referred to herein as

17   "workstations") may be remotely located from each other and may be controlled by

18   separate entities. Alternatively, permutations of each of the biller system 12, payer

19   system 14, business service provider system 16 and ASP 18 may be commonly

20   controlled and/or located at a single entity.

21   The biller system 12 and payer system 14 may interface with the ASP 18 in real

22   time via a web browser or other TCP/IP compliant software. The biller system 12 and

23   payer system 14 may comprise computing devices with appropriate network interface

24   hardware and software for establishing a TCP/IP session with a web server 30 at the

25   ASP 18 and for executing an application for interfacing with the web server 30. The

26   application may be typical HTML Internet web browser software, such as Netscape

27   Navigator^{TM} or Microsoft Internet Explorer^{TM}, which is capable of receiving HTML

28   documents from the web server 30 and returning HTTP posts to the web server 30. It

29   should be appreciated that such HTML interface enables an operator of a biller system

30   12 or payor system 14 to read, write, manipulate data, and otherwise interact with the

31   ASP in real time.

1   The biller system 12 and payor system 14 may also interface with the ASP 18

2   utilizing a batch interface for exchanging large quantities of data in data files of a

3   predetermined format. The batch interface may use TCP/IP or other network type

4   sockets or may utilize a dedicated network circuit such as a value added network

5   (VAN).

6   The business service provider system 16 may be an exchange or other service

7   bureau application providing a plurality of business processing services to its clients

8   (which may include the biller system 12 and/or payer system 14). One such business

9   processing service may be electronic bill presentment and payment, as may be

10   provided using a system and/or method consistent with the invention. In such a

11   configuration, from the point of view of the service provider system 16, the ASP 18

12   may be a back end system for performing such bill presentment and payment portions

13   of the overall services. The service provider system 16 may communicate with the

14   ASP 18 utilizing data files with a predefined format to assure that the content of such

15   data files may be recognized by the intended hardware and/or software. The

16   predetermined data file may be a data file with each data element including a label or

17   tag to identify the data.

18   A typical language for structuring such tagged field data files is known as the

19   extensible markup language (XML) and the predetermined data structure is known as

20   a schema. The data is referred to as an XML message. Utilizing the Internet 20, the

21   service provider system 16 and the ASP 18 may establish a TCP/IP session and

22   exchange XML messages.

23   It should be appreciated that, in an alternative embodiment, a biller system 12

24   or a payer system 14 may operate an accounting system interface application rather

25   than a web browser. In this case, the biller system 12 or payer system 14 will

26   communicate with the ASP 18 utilizing XML messages, and the XML communication

27   may be similar to that which may occur between the ASP 18 and the service provider

28   system 16. Such an accounting system interface application may enable the biller

29   system 12 or payer system 14 to avoid manually reading data from an HTML

30   document and manually re-entering into an accounting system. More specifically, the

31   XML messages may be used to directly input content into the accounting system or, at

1 a minimum, automatically populate content onto an accounting system data entry

2 screen.

3   The ASP 18 may comprise one or more web servers 30 coupled to a secured

4 zone network 22 between two routers 24, 26 serving as firewalls, one for protecting

5 the internal private network 28 of the ASP 18 and one for blocking unauthorized

6 Internet access. This zone 22 is often referred to idiomatically as a DMZ (i.e. "de-

7 militarized zone"). It is noted that one or more firewalls may be placed between any

8 one of a number of components of the present invention for security purposes. In this

9 standard firewall configuration of a DMZ 22, the web servers 30 may be coupled to the

10 Internet 20 by a first router 24 and coupled to a private network 28 by a second router

11 26. On the "front end", the web servers 30 may establish the TCP/IP sessions and

12 communicate with the biller systems 12, payer systems 14, and business service

13 provider systems 16, as described above. On the back end, the web servers 30 may

14 use XML messages to make remote processing calls (RPCs) to an application server

15 32 (described hereinbelow in further detail) and may receive XML response messages

16 to such calls. An invoice loader 34 (described hereinbelow in further detail) may be

17 provided for transmitting batch input to a database server 36, which may store invoice

18 and other financial, transactional, or non-financial data. Those skilled in the art will

19 recognize that such data may be generated by one of any number of billing systems,

20 e.g., SAP, Oracle Financials, JD Edwards, People Soft, Great Plains, etc. The data

21 outputted by these billing systems and input into the system may come in a variety of

22 formats including raw data, print file format, and X-12 ANSI 810 (EDI). The database

23 server 36 may include a database application 35 (described hereinbelow in further

24 detail) for reading and writing to the raw data stored on the magnetic media of the

25 database.

26   **Web Server**

27   With reference to the flowchart of Figure 2 in conjunction with Figure 1, an

28 exemplary fundamental operation of a web server 30 in accordance with one

29 embodiment of this invention is shown. A TCP/IP session may be established at step

30 40 with a remote client, which includes appropriate exchanges of passwords and/or

31 other authentication messages to verify that the remote client has authorized access.

1   Clients may be either workstations which interface with the server 30 using a browser

2   interface, or, alternatively, software clients which interface with the server 30 using

3   XML messages. Step 42 represents a determination as to whether the remote client is

4   operating a web browser or whether the client is operating an XML enabled

5   application. If the remote client is operating a web browser, the server 30 may send

6   out an initial HTML document to the client at step 48. This initial document may be the

7   main menu page that the operator at the remote client might expect to see

8   immediately after logging onto the system utilizing the browser. The server may then

9   receive an HTTP post from the remote client at step 50 and, in response to such HTTP

10   post, build an XML message for making a remote processing call to the application

11   server 32 at step 52. More specifically, the XML message is based on the content of

12   the post and a predetermined schema for the function that the operator of the remote

13   client has requested via the HTTP post. For example, if the operator had selected to

14   view a list of open invoices from the HTML menu document, the server might build an

15   XML message for requesting open invoices from the application server 32 based on

16   the schema for viewing a list of open invoices in response to the HTTP post.

17   Step 54 represents the server making an XML remote processing call to the

18   application server 32 utilizing the XML message. An XML response message may be

19   received back from the application server 32 at step 56. The web server may then

20   utilize the content of the XML response message to build an HTML document to send

21   to the remote client in response to the remote client's HTTP post at step 58. More

22   specifically, each web server 30 may include a style sheet database 52 that stores

23   style sheets for various documents that may be sent to remote clients and may provide

24   different style sheets for the same document based on different clients. As such, the

25   branding, look and feel, and layout of documents may be varied on a client-by-client

26   basis. The step of building an HTML document may therefore also include selecting a

27   style sheet corresponding to the remote client and combining the style sheet with the

28   content of the XML response message to build the HTML document. The style sheet

29   may include data fields and building the HTML document may include populating the

30   style sheet by matching data elements from the response message with fields on the

31   style sheet. The HTML document may then be sent to the remote client at step 59,

1   and, returning to step 50, another HTTP post may be received and the foregoing steps

2   repeated for that HTTP post.

3   Because it is envisioned that the operator of the biller system 12 (Figure 1) may

4   provide electronic bill presentment and payment services to several of it suppliers,

5   each operating a payor system 14, it is envisioned that style sheets will be common to

6   all biller systems 12 and payor systems 16 when interfacing with the ASP 18 with

7   respect to reading, writing, and manipulating data at the ASP 18 related to amounts

8   due to the biller operating the biller system 12. In which case, a style sheet is selected

9   by identifying the biller system 12 utilizing an element of the response message and

10 selecting a style sheet corresponding to such biller system 12.

11   Similarly, it is envisioned that he operator of a payor system 13 may provide

12 electronic bill and payment services to several of its customers, each operating a biller

13 system 12. It is envisioned that style sheets will be common to all biller systems 12

14 and payor systems 16 when interfacing with the ASP 18 with respect to reading,

15 writing, and manipulating data at the ASP 18 related to amounts due to the biller

16 operating the biller system 12 from such operator of the payor system 13 providign the

17 services to its customers.   In which case, a style sheet is selected by identifying the

18 payor system 14 utilizing an element of the response message and selecting a style

19 sheet corresponding to such payor system 14.

20   Alternatively, if at step 42 the remote client is determined to be a client utilizing

21 an XML enabled application instead of a web browser, the web server may send an

22 initial XML message to the remote client at step 60. The web server may then receive

23 an XML message from the remote client at step 62 and validate the XML message at

24 step 64. If necessary, the content may be transformed into an XML message

25 compliant with the schema needed for making a remote processing call to the

26 application server at step 67 if it did not validate at step 64.

27   .   The schema-compliant XML message may then be used to make the remote

28 processing call to the application server at step 66. At step 68, a response XML

29 message may be received from the application server, and, at step 70, the response

30 XML message may be returned to the remote client. Thereafter, returning to step 62,

31 another XML message may be received and the foregoing steps may be repeated.

1   It should be appreciated that the above description represents an exemplary

2   process utilized for interacting with each remote client. In operation, the server may

3   be operating with a plurality of remote clients simultaneously and/or utilizing a multi-

4   tasking based operating environment. Furthermore, a plurality of web servers 30,

5   each communicating with a plurality of different clients, may each be capable of

6   making XML calls to the application server 32 to perform the above described

7   functions.

8   **Application Server**

9   The application server 32 may perform the main processing of the business

10 functions carried out by the ASP 18. The application server 32 may operate within a

11 hardware and software environment. The software environment may comprise a

12 plurality of applications that may be object-oriented and/or table-driven, whereby new

13 products, applications, modules and/or transaction types may easily be integrated.

14 Such software components may include, e.g., an operating environment 41 (e.g.

15 Microsoft Windows NT^{TM}, Windows 2000^{TM}, or Sun Solaris^{TM}), transaction processing

16 software (e.g. Microsoft Transaction Server^{TM}), communications software, database

17 tools (e.g. RogueWave^{TM}), query and/or reporting software (e.g. Seagate's Crystal

18 Reports^{TM}), a database interface 33, a message parser/builder 51, a business function

19 selection object 38, one or more business objects 37, and/or one or more other

20 applications, which may be table-driven. As described hereinbelow with respect to

21 Figure 3, the message parser/builder 51 may verify access levels of clients accessing

22 the web servers 30, as well as verify the format of XML messages and build

23 appropriate messages to pass to the appropriate selection objects 37 for execution.

24   The transaction processing software may be a component-based transaction

25 processing application for developing, deploying, and managing high performance,

26 scalable, and robust enterprise, Internet, and intranet server applications, which

27 defines an application programming model for developing distributed, component-

28 based applications and provides a run-time infrastructure for deploying and managing

29 these applications. A clustering application may optionally be provided for load

30 balancing and fail-over services to cluster distributed application servers into a single,

31 high-performance, highly available environment of application server resources,

1   thereby avoiding bandwidth, latency, and congestion problems and providing multi-

2   server scalability for unlimited concurrent user access. The query and/or reporting

3   software may be an application or object providing for an environment in which client

4   reports and file download formats are easily customizable. One or more business

5   objects 37 or applications may reside on the application server 32, such business

6   objects 37 or applications being the components that perform the central transactional

7   functions of the server 32. The business objects may receive XML messages in a

8   predefined format and return XML response messages in a predefined format. Menus

9   of options (as shown in Figures 5-11and described hereinbelow) may be made

10 available to the client by the message parser/builder 51 (or, as those skilled in the art

11 will recognize, by one of any number of components of the invention, e.g., selector or

12 another business object).

13   As discussed hereinbelow, exemplary business objects may include an object

14 for reviewing invoices, an object for making adjustments to invoices, and an object for

15 initiating invoice payment.   One or more of any of the foregoing described

16 applications may access the database server 36 via the database interface 33 and/or

17 database application 35 for purposes of retrieving and modifying its data. Other

18 applications may be provided, consistent with the provision of billing, payment, or other

19 financial or non-financial services. For example, an e-mail notice application may be

20 provided for sending e-mail notices of the invoices to one or more payer systems 14

21 which are set up to receive e-mail notices. While the foregoing components of the

22 application server 32 may be referred to herein as "applications", "modules",

23 "components", "interfaces", and/or "objects", it should be understood by those skilled in

24 the art that such labels should not be construed in any way to be limitations. Any of

25 the components of the application server 32 may comprise machine-readable

26 programming code embodied in a tangible medium, e.g., Java beans. Depending on

27 whether the embodiment of the invention is object-oriented, such components may or

28 may not be formal objects. A table at the end of this Detailed Description lists

29 exemplary objects and corresponding XML messages in one embodiment of the

30 invention. It is noted that the business objects of the present invention should be

31 modular, i.e., functionality may be added to, deleted from, or modified in the system by

1   adding or removing business objects. Thus, each business object should be

2   constructed with expected input and output data only, as though it were a "black box".

3   The internal processes of each business object "black box" are not relevant to the

4   overall operation or maintenance of the system, to the extent that any business object

5   with a given set of expected input and output data may be substituted for an existing

6   business object for performing a similar or identical function having the same set of

7   expected input and output data, wherein the system need not ever require knowledge

8   of the internal operation of the business object for proper functioning or maintenance.

9   With reference to the flowchart of Figure 3, which illustrates an exemplary

10   operation of the application server 32 in one embodiment of the invention, in

11   conjunction with Figure 1, the general operation of the application server 32 will now

12   be described. First, an XML remote processing call may be received at step 72 from

13   one of the web servers 30. The message parser/builder 51 may receive from the web

14   servers 30 either an XML message from the software client or an HTTP post from the

15   workstation client. If an XML message is received from a software client, the message

16   parser/builder 51 may verify that the particular client has appropriate access levels for

17   sending such XML message, thereby preventing a person from manually writing an

18   XML message for an option that is outside of the permitted workflow for the client.

19   After verifying access levels, the message parser/builder 51 may verify that the XML

20   message is the exact format needed for passing to the selection object 37. If not, data

21   may be extracted and the appropriate message is built. The message may then be

22   passed to the selection object 37, which may pass the message to the appropriate

23   business object 37 for execution. In the case of an HTTP post from a workstation, the

24   message parser/builder 51 may build an XML message for performing the transaction

25   based on the post and the access levels. The message may then be passed to the

26   selection object 37, which may pass the message to the appropriate business object

27   37 for execution.

28   A business function selection object 38 may then make a call at step 74 to the

29   appropriate business object 37 associated with the XML call. The selected business

30   function object may execute and generate at step 76 XML calls to the database

31   interface 33. The database interface 33, in turn, may utilize predefined instructions at

step 78 for directing the database server 36 to access and/or write data into the database tables. In one embodiment, the predefined instructions may be a group of instructions, e.g., SQL calls. It is noted, however, that the business function objects 37 may not directly perform the SQL calls at step 78. The database interface 33 object may exist so that the relational structure of the database 36 may be modified without modifying each of the business function objects 37. Each database relational structure may merely need to be defined in a database structure file (not shown) that may be used by the database interface 33 object to structure the appropriate SQL calls for execution at step 78. A response to the SQL call may then be received at step 80 from the database 36. A single XML call at step 76 from a business function object 37 may cause the database interface 33 object to initiate several SQL calls at step 78. Therefore, if more than one SQL call is necessary (as determined at step 90), a plurality of such calls may be initiated at step 78, as necessary, and the corresponding responses may be received at step 80. Once the database interface 33 object has completed the SQL calls at step 78, it may build (at step 82) and return (at step 83) a response XML message to the business function object 37. The response XML message may then be received at step 84 by the business function object 37. A business function object 37 may need to initiate several XML calls to the database interface 33 object during performance of the selected business function, at step 76. Therefore, if more than one XML call is necessary (as determined at step 85), a plurality of such calls may be initiated at step 76, as necessary, and the corresponding database calls may be generated (at step 78) and may be received (at step 80), and appropriate XML responses may be built (at step 82), returned (at step 83), and received (at step 84). Once the XML calls to the database interface have been completed at step 76, (i.e. the business function has been completed), the business function object 37 may build a response XML message at step 86 and may return the XML response message to the web server 30 at step 88, and the foregoing steps repeated for a subsequent XML remote processing call which may be received at step 72.

Invoice Loader

1   With reference to the flowchart of Figure 4, which illustrates an exemplary
invoice loading operation in one embodiment of the invention, in conjunction with
Figure 1, the general invoice loader 34 operation will now be described. The invoice
loader 34 module may provide batch input to the database 36. This may be useful
because many enterprise accounting systems may export an invoice file on a periodic
basis. The batch invoice file may then be sent at step 100 to the invoice loader
module 34 via one of any number of means 53, e.g., as an e-mail attachment, FTP
load, an EDI VAN (value added network), or another private network link. Therefore,
the invoice loader module 34 may include a network interface (not shown) for coupling
to the Internet and may include one or more private network interfaces (not shown) for
coupling to EDI VAN's or other private network interfaces. Each of these network
interfaces may be a network card, or may comprise such other hardware and software
as may be appropriate to effect the network interconnection. Alternatively, the invoice
loader module 34 may couple only to a local area network 28 at the processing facility
(i.e. at the geographic location of the ASP 18), and one or more routers 24, 26 in the
DMZ 22 may serve to couple the invoice loader 34 to the Internet 20 and to each
private network, as may be appropriate.

Once the invoice loader module 34 receives the invoice file at step 102, it may
verify that the file is in the appropriate invoice loader format at step 104. Typically, the
biller may be responsible for running the necessary translation program to convert the
invoice file from the biller's accounting system to the invoice loader format. However,
it may be possible for the file to arrive at the invoice loader module in the accounting
system format, in which case the invoice loader module may then identify the
accounting system format and run an appropriate translation program at step 106 to
convert to invoice loader format. Exemplary formats from which invoices may be
loaded include ANSI X12 810, flat ASCII files, or well formed XML schemas.

Once the invoice file is in the invoice loader format, the invoice loader module
34 may enter the invoices into the database 36 at step 108 and may, if appropriate,
send out e-mail notices at step 114 to one or more payer system 14 users indicating
that an invoice is available. To this end, the invoice loader module 34 may therefore

1   include an invoice loader application 39. The invoice loader application 39 may make

2   appropriate calls to a database application 35 for loading the invoices. More

3   specifically, the database application 35, which may run on the database server 36 (or,

4   alternatively, on the application server 32), may provide for the raw data stored on the

5   magnetic media to be logically accessible in a relational database table format.

6   Predefined instructions for accessing and writing data into the tables may be sent to

7   the database application 35. In one embodiment, the predefined instructions may be a

8   group of instructions, e.g., SQL calls. The invoice loader application 39 may therefore

9   execute appropriate SQL calls for writing the invoice data to the database 36.

10   Once the invoice data is in the database 36, e-mail notices of the invoices may

11   be sent out to one or more payer system 14 users who are set up to receive e-mail

12   notices at step 114. An e-mail notice application 31 may be provided on the

13   application server 32 for making appropriate SQL calls to the database 36. Such calls

14   may be made for purposes of detecting new invoices at step 110, as well as

15   determining, based on the identity of the payer, if an e-mail notice is required, at step

16   112. More specifically, the e-mail notice application 31 may search the database 36

17   for a flag or other identifier of a new invoice, and then, for each new invoice, may

18   obtain data from a payer's profile indicating whether an e-mail notice is appropriate,

19   and if appropriate, the address to which the e-mail notice should be sent. The e-mail

20   notice application 31 may then send the e-mail. Alternatively, the e-mail notice

21   application 31 may run on the invoice loader module 39 instead of running on the

22   application server 32.

23   **Database Server**

24   The database server 36 may be an OLTP (on-line transaction processing)

25   system, embodied in a server, such as Microsoft SQL Server 7^{TM}, Oracle 8^{TM}, Sybase

26   Adaptive Server R12^{TM}, DB2^{TM}, Informix^{TM}, or another ODBC-compliant database.

27   The database server 36 may be configurable for sharing with other applications,

28   including access by a report writer application, and may comprise a distribution and

29   replication protocol (DRP) device. A backup database server (not shown) may also be

30   provided, wherein some or all of the data on the database server may be mirrored to

31   the backup database server. In this configuration, in the event an application

1   performing a transaction on the database server experiences failure, the application

2   may start at the backup server location and proceed from the point of failure, thereby

3   preserving transaction integrity.

4   The database 36 may be a relational database, i.e., data management

5   technology modeled such that all data is organized as though it is formatted into

6   tables, with the table columns representing the table's fields or domains and the table

7   rows representing the values of the table's fields or domains. Data between tables

8   may be related to one another, using, for example, pointer data. Data may be logically

9   organized as tables but not necessarily physically stored as such. The database

10   interface 33 may access and update data via a language interface or "structured query

11   language" (SQL) calls. The database 36 may comprise a relational database where

12   the payer and biller profiles (which may include access control data and/or dispute

13   rules) may be related between payer systems 14 and biller systems 12. The message

14   parser/builder 51 may retrieve access control data from the database 36 when a

15   workstation client logs on. Similarly, business service provider profiles may be stored

16   in the database 36 and may include access control data for one or more business

17   service providers 16.

18   Invoice data stored on the database 36 may include invoice-specific data

19   received from the biller 12 each time the biller 12 sends an invoice to the ASP 18.

20   Such data may include, e.g., the identity of the biller and payer, invoice line items, and

21   settlement and payment options. Biller profile data may be stored on the database 36

22   and may include items that a biller 12 need only enter once, and may change only

23   periodically thereafter. Such items may include dispute rules and access levels for

24   each biller workstation with system access. The dispute rules may be payer-specific

25   or may be may applied globally to all payers.

26   Payer profile data may be stored on the database 36 and may include items

27   that a payer 14 need only enter once, and may change only periodically thereafter.

28   Such items may include access levels for each payer logon ID (referred to as a payer

29   workstation) with system access.

Client Types

1   **Client Types**

2   In one embodiment, two client types may access the ASP 18, a workstation

3   client (e.g. a browser) interfacing with the system 18 utilizing HTML documents and

4   HTTP posts, and a software client interfacing with the system 18 utilizing XML

5   messages.   Both billers and payers may comprise workstation clients, and the

6   message parser/builder 51 may present different work flow options to each via menus.

7   Host (or "administrator") users and help desk users may be biller or payer workstations

8   having access levels which are a subset of all access options available to the biller or

9   payer. Host users (who may be affiliated with a business service provider system)

10   may control most non-invoice related data and functionality. A biller system user may

11   control invoice related data and functionality associated with a specific billing

12   company. A payer system user may have specific functionality associated with all

13   related invoice transactions to the paying company. Help desk users may be provided

14   access to the system in order to troubleshoot users' questions.

15   Host users (also referred to herein as "administrators") may configure and

16   maintain the system. A single SuperUser account may be established for each

17   installation of the system. The SuperUser may be pre-configured with the system and

18   have all permissions allowed. The SuperUser may create additional host users with a

19   subset of their permissions. Host users may act as system administrator, whose role is

20   to manage users in the system, handle database administration, monitor system

21   activity, manage enrollment and handle system error conditions.

22   A host user may create a biller system and one or more biller administrator

23   users associated with such biller system. This action may bind the specific biller

24   system user to the invoices associated with the biller. Additional biller system users

25   may be created by the biller administrator.

26   Similarly, A host user may create a payer system and one or more payer

27   administrator users associated with such payer system.

28   A help desk user may be a hybrid type of user. The help desk user may

29   manage technical support issues. This user may log in as any biller or payer system

30   user and use the system as if they were actually that user. The application may

31   disallow any changes made by this user from being committed to the database. The

1 help desk user may be created by a host administrator or SuperUser. A user created

2 as a help desk user may only perform the help desk functionality, with all other system

3 functionality being disabled.

4   A help desk user may log on to the system through the standard logon page

5 with their own user ID and password. The help desk user may then be immediately

6 presented with the standard logon page, where he or she will then log on with the user

7 ID of the person he or she is helping and the help desk user's password. Upon a

8 successful log on, the help desk user may be connected as if he or she were the

9 actual user, without the ability to modify any data.

10   **Login and Access**

11   The application server 32 may authenticate each client via a logon process, and

12 each client may have a specific set of access levels for performing certain functions,

13 which may be a subset of all of the functions available to the particular biller, payer or

14 business provider. The message parser/builder 51 may maintain a table of access

15 levels for each client which is currently logged into the system. With respect to

16 transaction requests, when an HTTP post is received from a workstation or an XML

17 message is received from an application client, the message parser/builder 51 may

18 only build the XML message from the HTTP (or pass the XML message received) if

19 the client has appropriate access levels. With respect to responding to a transaction

20 request, the message parser/builder 51 may control the clients' work flow and limit the

21 menu choices which appear in the outbound XML message to those that would be

22 available as next steps in the work flow for the particular client.

23   The system may permit a user (i.e. the operator of a biller, payer or business

24 service provider workstation) to gain access by clicking on a "login" button on the initial

25 screen, or by going directly to the logon URL without having to navigate through the

26 initial pages by simply entering the full URL in the browser, "bookmarking" the page, or

27 using a "favorites"-type feature of the browser. The system may present the user with

28 a logon page, wherein he or she must specify a valid user ID and password to gain

29 access. If an invalid ID or password is entered, the user may be told that an invalid

30 ID/password was entered. In one embodiment, if a user enters a valid user ID and an

31 invalid password five times in a row, the system may "disable" the user ID (i.e. the

1   system 18 will not present the workstation defined by the ID with other system options

2   until another workstation, with appropriate access levels, performs a function to reset

3   the "disabled" account). If, after this period, the user enters a valid ID and password,

4   the system may display a message indicating that their account has been disabled.

5   Alternative authentication methods may include any method of verifying the

6   identity of a user or a component of the invention and may include a security

7   mechanism such as one or more of a digital signature, a PIN number, a password, a

8   smart card, or a "master" or "challenge" key. In one embodiment of the invention, an

9   XML script may create a Java applet that monitors the active application and interacts

10   with a separate security server residing within the application server. The Java applet

11   may be configurable to interrupt the current application to prompt for authentication,

12   such as by a digital signature, a PIN number, a password, or a master key, and to

13   communicate with the security server to effect the authentication. If the security

14   operation is successful, the application may continue without interruption; otherwise,

15   the application may be terminated according to the XML script. Alternatively, the

16   foregoing process or a part thereof may be used for transferring data between any two

17   components in an embodiment of the present invention, including those external to the

18   invention, such as an end user, a client, a financial institution, a back office, an

19   administrator, an e-mail or fax recipient, or a server. One or more of the foregoing

20   security operations may be implemented using application security middleware, such

21   as Ubizen's MultiSecure™ ETS, MultiSecure™ ASE, or MultiSecure™ WAC. Further

22   security means may comprise one or more of the following: password or PIN number

23   protection, use of a semiconductor, magnetic or other physical key device, biometric

24   methods (including fingerprint, nailbed, palm, iris, or retina scanning, handwriting

25   analysis, handprint recognition, voice recognition, or facial imaging), or other log-on

26   security measures known in the art. Password protection may include certain validity

27   requirements upon establishing a password, e.g., disallowing more than two

28   consecutive characters in a password, disallowing the same password for a minimum

29   of six consecutive password changes, and/or disallowing more than one user-initiated

30   password change per day. Passwords may be set to expire after a certain number of

1 days, and an inactive user account may be set to expire or become disabled after a

2 certain number of days of nonuse.

3   Following logon, as described above, a user may be presented with

4 predetermined work flow options based on the access levels available for his or her

5 particular workstation.

6 <div align="center">**Security**</div>

7   Point-to-point data communications over the Internet may be handled by secure

8 sockets between the web server 30 and client 12, 14, 16. Exemplary protocols used

9 may include Netscape's Secure Socket Layer (SSL) or secure HTTP. As those skilled

10 in the art will recognize, other embodiments of the invention may include one of any

11 number of methods for two-way data encryption and/or digital certification for data

12 being input to and output from the web server 30, to provide security to data during

13 transfer. In particular, an algorithm such as Triple DES may be used to encrypt such

14 data as account numbers, credit card numbers, tax ID numbers and/or passwords.

15 <div align="center">**Host User Workflow**</div>

16   Figures 5a, 5b, and 5c illustrate[s] an exemplary host user workflow in one

17 embodiment of the system. When a user logs in 501 to the system using the user ID

18 of a host user, the system may display a host administration or "welcome" page 502.

19 The system may display the user's name at the top in the form of a "Welcome

20 'Username'" message, for personalization. The system may display a host

21 administration page containing host statistics and a list of "action items" with current

22 counts and links to the corresponding pages. Such counts may include biller count,

23 payer count, enrollment request count, connected user count, invoice load error count,

24 total invoice count, and paid invoice count. The system may calculate these reported

25 statistics at the time the active user logs on to the system and/or may update these

26 statistics in real time. As part of reporting these statistics, a query tool may be

27 integrated into the system to generate pre-formatted reports. The system may permit

28 the host user to return to this page by clicking on a link that may be present on every

29 page during system access. One area of the screen may contain navigation buttons

30 grouped into categories, e.g., administration 503 and reports 504. The system may

31 permit these categories to be expanded into subcategories that modify another

1   portion of the screen. One area of the navigation frame may contain the user name

2   (not the user ID) who is logged on. The system may permit clicking on this link to

3   modify the user's basic profile information, which the system may store as global

4   information on the database.

5   The system may permit a host user to select an option to edit payers 507,

6   wherein the system may permit the administrator to add, modify, or delete payers from

7   an edit payer page 508. A payer may be a company that does business with one or

8   more billers in the system. Each payer system may have one or more users that will

9   have certain permissions. The edit payer page 508 may contain a list of current payers

10 in the payers list box. When an administrator selects a payer, the system may display

11 information for that payer in the company information section. The system may permit

12 an administrator to add information for a new payer in the company information section

13 and select "add" to add the new payer. The system may permit company data to be

14 entered for the following exemplary fields, which the system may store as global

15 information on the database: name, "division", address, city, state, zip, country, SIC

16 code, TIN, and organization type. The system may require the company name plus

17 "division" to be unique. The system may permit modify and delete operations to be

18 performed on the currently selected payer. The system may require fields for

19 company information, such as name and phone. The system may display the list of

20 payers and permit search and find operations, next and previous page navigation, first

21 letter selector navigation, and scrolling navigation, in order to effectively display large

22 numbers of payers.

23   The system may provide a user list box, which may be populated with the

24 selected payer system's user names. As the administrator clicks on each user in the

25 list, the system may display the user's information in the user information section. The

26 system may provide an "edit users" option for directing the administrator to an "edit

27 users" page, if the payer has been saved to the database. The system may provide

28 an "edit users" page to allow the administrator to add, modify, or delete users

29 associated with the current payer. This page may display the name of the payer at the

30 top. The system may permit the host user to select an option to edit the active user

31 profile 505, wherein the system may direct the host user to a page 506 displaying the

1   organization name of the host, biller or payer at the top, to establish the context of the

2   current edit. The system may permit information to be maintained and edited at this

3   page, which the system may store as global information on the database, including,

4   e.g., last name, first, middle, phone, fax, e-mail, e-mail2, user id, password,

5   confirmation, language, currency and privilege group. The system may require certain

6   fields for user information, such as last name, first name, e-mail and phone. The

7   system may provide a reset password button to reset the selected user's password to

8   the default setting (e.g. user's last name). The system may also permit the

9   administrator to add a new user to the current payer by entering information into the

10   user information section and selecting "add". The system may require the combination

11   of last name, middle initial and first name to be unique. The system may permit modify

12   and delete operations to be performed on the currently selected user. The system

13   may provide a checkbox for temporarily deactivating a user. The system may

14   automatically send an e-mail to a new user after they have been added, informing

15   them of how to connect and logon to the system. The system may not permit a host

16   user to set permissions. The system may permit a host user to create biller or payer

17   system administrator users, both of whom may be afforded all permissions.

18   The system may permit the host user to select an option to edit billers 509,

19   wherein the system may permit the administrator to add, modify, or delete billers from

20   an edit biller page 510. A biller may be a company that does business with one or

21   more payers in the system. Each biller system may have one or more users that will

22   have certain permissions. The edit biller page 510 may contain a list of current billers

23   in the biller list box. When an administrator selects a biller, the system may display the

24   information for that biller in the company information section. The system may permit

25   the administrator to add information for a new biller in the company information section

26   and select "add" to add the new biller. The system may permit company data to be

27   entered for the following exemplary fields, which the system may store as global

28   information on the database: name, address, city, state, zip, country, SIC code, TIN,

29   and default template type. The system may require that the company name be

30   unique. The system may permit modify and delete operations to be performed on the

1 currently selected biller. The system may require certain fields for company

2 information, such as name and phone.

3   The system may permit a host user to select an option to edit biller websites

4 and logos, directing the user to a biller website and logo page 511. The system may

5 display a list of billers, and upon selection of a biller from the list, the system may

6 populate the company information area with details about the current biller. For each

7 biller, the system may permit a list of company logos and websites to be edited. The

8 system may make new logos available to the system with an "add" button which

9 uploads the logo file, and may likewise permit logos to be removed from the system

10 with a "remove" button. The system may display a list of websites via a listbox

11 containing the sites and a site details edit area. Upon selection of a website in the list,

12 the system may populate the site details section. The system may permit the URL,

13 description, and type of website to be edited. The system may provide a delete button

14 for removing a site from the list. The system may provide a save button to save the

15 current website. The system may provide a new site button for emptying the edit area

16 to allow a new site to be entered and saved. The system may provide selectable links

17 for accessing the biller's enrollment page and biller profile page. The system may be

18 adapted to store logo and website data as global information on the database.

19   As described above with respect to users associated with payers, the system

20 may provide a user list box, which the system may populate with the selected biller

21 system's user names, and the system may provide an "edit users" option for directing

22 the user to an "edit users" page, where the system may allow the administrator to add,

23 modify, or delete users associated with the current biller.

24   The system may permit the administrator to add a new user to the current biller

25 by entering information into the user information section. The system may require that

26 the combination of last name, middle initial and first name be unique. The system may

27 permit modify and delete operations to be performed on the currently selected user.

28 The system may provide a checkbox for temporarily deactivating a user. The system

29 may be adapted to store contact information as global information on the database,

30 including, e.g., last name, first, middle, phone, fax, e-mail, e-mail2, user ID, password,

31 confirmation, language, currency and privilege group. The system may require certain

1   fields for user information, including last name, first name, e-mail and phone. The
2   system may provide a reset password button for resetting the selected user's
3   password to the default setting. The system may be adapted to automatically send an
4   e-mail to a new user after they have been added, telling the user that they have 24
5   hours to log in and change their password or the account will be disabled (e.g. where
6   the password is set to the default of user's last name; accounts may be re-enabled by
7   a host user). The e-mail may inform them of how to connect and logon to the system.
8   The system may permit a host user to select a "relationships" option 512 for
9   being redirected to a relationships page 513 for viewing, modifying and/or establishing
10   biller/payer relationships. This page may contain a list of current billers in the billers
11   list box and two payer list boxes: available payer and related payer. When a user
12   selects a biller from the list box, the system may update the two payer list boxes. The
13   available payer list box may contain all payers not currently related to the selected
14   biller that have been approved by the biller. The related payer list box may contain all
15   payers currently related to the selected biller. The system may provide "add" and
16   "remove" buttons to allow payers to be added or removed from the related payers list.
17   The system may display in a Payer ID# field the system-wide biller-customer number
18   for the selected payer from either list. The system may not save this page unless all
19   related payers have Payer ID#'s and may display a warning message may inform the
20   user of this condition. The system may be adapted to store payer/biller relationship
21   data as global information on the database.
22   The system may permit the host user to select an option to add/modify/delete
23   administrators associated with the host. The system may permit the administrator to
24   add a new user to the channel host by entering information into a user information
25   section and selecting "add". The system may require that the combination of last
26   name, middle initial and first name be unique. The system may permit modify and
27   delete operations to be performed on the currently selected user. The system may
28   provide a checkbox for temporarily deactivating a user. The system may be adapted
29   to store contact information as global information on the database, including, e.g., last
30   name, first, middle, phone, fax, e-mail, e-mail2, user ID, password, confirmation,
31   language and privilege group. The system may require certain fields for user

1   information, such as last name, first name, e-mail and phone. The system may provide

2   a reset password button for resetting the selected user's password to the default

3   setting.   The system may be adapted to automatically send an e-mail to a new user

4   after they have been added, informing them of how to connect and logon to the

5   system.

6   The system may permit a host user to select an option 514 to change security

7   information, in which case the system may permit administrator, biller and payer

8   security settings to be modified at one or more user security/privilege pages 515. In

9   the various privilege pages, the system may permit the privilege group to be entered

10 and presented in the local language. The system may present the list of functional

11 access permissions in the language of the active user.

12 For changing privilege information relating to host administrators, the system may

13 permit administrator privilege groups to be defined and edited. The system may

14 display a list of available permissions, the permissions being inherited from the active

15 user currently logged on. The system may provide a listbox containing all defined

16 administrator privilege groups, wherein selecting a previously defined group may

17 cause the system to populate the list with the corresponding settings. The system

18 may provide an "all" button for setting all permissions when selected, and a "none"

19 button for clearing all permissions when selected. The system may permit add, modify

20 and delete operations to be performed on the current privilege group. The following

21 list may be representative of exemplary permissions that may be set for host

22 administrators: create new billing entities; create/maintain new biller system

23 administrators; activate new biller system administrators; create new paying entities;

24 create/maintain new payer system administrators; activate new payer system

25 administrators; create/maintain new host administrators; maintain biller-payer

26 relationships; reset biller/payer system administrator user passwords; maintain

27 adjustment codes; edit mailing lists; and run canned reports.

28   For changing privilege information relating to billers, the system may permit

29 biller permissions to be defined and edited. The system may display a list of available

30 permissions, the permissions being inherited from the active user currently logged on.

31 The system may provide a listbox containing all defined biller privilege groups, wherein

1   selecting a previously defined group may cause the system to populate the list with the

2   corresponding settings. The system may provide an "all" button for setting all

3   permissions when selected, and a "none" button for clearing all permissions when

4   selected. The system may permit add, modify and delete operations to be performed

5   on the current privilege group. The following list may be representative of exemplary

6   permissions that may be set: create/maintain new biller system users; activate biller

7   system users; create/maintain new biller system administrator users; reset user

8   passwords; maintain adjustment codes; edit biller bank holidays; edit biller/payer

9   agreements; edit mailing lists; and run canned reports.

10   For changing privilege information relating to payer system users, the system

11   may permit payer permissions to be defined and edited. A list of available permissions

12   may be displayed, the permissions being inherited from the active user currently

13   logged on. The system may display a listbox containing all defined payer privilege

14   groups, wherein selecting a previously defined group may cause the system to

15   populate the list with the corresponding settings. The system may provide an "all"

16   button for setting all permissions when selected, and a "none" button for clearing all

17   permissions when selected. The system may permit add, modify and delete

18   operations to be performed on the current privilege group. The following list may be

19   representative of exemplary permissions that may be set: create/maintain new payer

20   system users; activate new payer system users; create/maintain new payer system

21   administrators; reset user passwords; maintain adjustment codes; edit payer bank

22   holidays; edit biller/payer agreements; edit mailing lists; and run canned reports. The

23   system may be adapted to store any of the foregoing permission data as global

24   information on the database.

25   The system may permit a host user to select a "load invoices" option 516 for

26   being redirected to a page 517 for performing a manual load of selected invoice files or

27   controlling the automatic loading times of biller uploads. The load invoice page 517

28   may contain a list of current billers in a billers list box. When an administrator selects a

29   biller, the system may use files found in the directory or subdirectories used for invoice

30   loading associated with the selected biller to populate the invoice files list box. The

31   system may permit the host user to select one or more files from the invoice files list

1   box and select an option for loading them at that time, which may force the system to

2   load the selected invoice files immediately. After the process is complete, the system

3   may display any error information that occurred during processing may on this page.

4   The system may handle the automatic loading of invoices through a scheduling

5   interface.

6   The system may permit a host user to select a "host profile" option 505, which

7   may direct the user to a host profile page 506 for allowing the host's profile information

8   and payment method information to be edited. The system may allow data to be

9   entered for the following exemplary fields, which the system may be adapted to store

10 as global information on the database: name, address, city, state, zip, country, phone,

11 number, fax number, and maximum invoice amount allowed. The system may use the

12 maximum invoice amount allowed field to establish a threshold for a maximum

13 payment for a single invoice.   The system may permit invoice values that exceed this

14 amount to be loaded into the system but not to be paid through the system. The

15 system may also permit payment method information to be modified at this page, i.e.

16 the system may permit the administrator to define the payment methods that the host

17 has currently enabled. The system may display a payment methods area consisting of

18 two listboxes, an available methods box containing all the payment methods that are

19 currently unassigned by the host, and an enabled methods box containing all the

20 methods the host has enabled. The system may provide two buttons to allow methods

21 to be transferred from box to box. The system may provide save and cancel buttons

22 at the payment methods area. Exemplary available payment methods may include

23 ACH debit, credit card/procurement card, and paper check.

24   The system may permit the host user to select a reports option 504, which may

25 cause the system to display subcategories that correspond to the available reports.

26 Exemplary reports the system may generate may include: access report 521; invoice

27 load and error reports 522; invoice payment reports 523; bottomline payment reports

28 524; analyze RDBMS (Relational Database Management System) 525; review

29 performance statistics 526; and activity report 527. Activity report 527 may cause the

30 system to detail the following exemplary activities: create new biller/payer; create new

31 contacts; add/remove biller-payer relationships; edit biller bank holidays; edit

1 biller/payer profiles; reset biller/payer system administrator passwords; add/edit

2 adjustment codes; edit mailing lists; edit contact info; create new logins for contacts;

3 edit login info; disable/enable logins; and help desk login. The system may permit the

4 user to select from among various reporting options and/or filters 528 (which the

5 system may be adapted to store as global information on the database), and the

6 system may then generate a report and permit the user to view and/or print it at a

7 report page 529.

8   Other functionality which the system may provide for the host user includes a

9 password change selection 530, which may cause the system to direct the user to a

10 password change routine 531; a help selection 533, which may cause the system to

11 direct the user to a help routine 534; and a logout routine 550.

·12

13   **Biller System Workflow**

14   Figures 6a, 6b, and 6c illustrate[s] an exemplary biller system workflow in one

15 embodiment of the system. When a user logs in 601 to the system using the user ID

16 of a biller, the system may display a biller system administration or "welcome" page

17 602. The system may display the user's name at the top in the form of a "Welcome

18 'Username'" message, for personalization. The system may display at a biller system

19 administration page key biller statistics and a list of "action items" with current counts,

20 amounts in local currency and links to the corresponding pages, as well as information

21 about the basic functionality of the main topics. The system may also display at this

22 page information provided by the administrative user regarding how to contact the

23 administrative user. The current counts may include total invoices, closed invoices,

24 paid invoices, unpaid invoices, and adjusted invoices. The system may provide a

25 selection to the user for filtering and/or sorting the counts. The system may permit the

26 biller system user to return to this page by clicking on a link that may be present on

27 every page during system access. One area of the screen may contain navigation

28 buttons grouped into categories, e.g., administration 603 (discussed further

29 hereinbelow at "Biller System Administration"), invoices/payments 680, and reports

30 604. The system may expand these categories into subcategories that modify another

31 portion of the screen. One area of the navigation frame may contain the user name

1   (not the user ID) who is logged on. The system may allow the user to click on this link

2   to modify his or her basic profile information.   The system may provide other

3   functionality, including a "help" button 650 for directing the user to a help section 651

4   and a "logout" button 652 for logging the current user out of the system.

5   The system may allow the biller system user to select an option to edit the

6   active user profile, wherein the system may direct the biller system user to a page

7   displaying the organization name of the biller at the top, to establish the context of the

8   current edit. The system may permit information to be maintained and edited at this

9   page and may store the information as global information on the database, e.g., last

10 name, first, middle, phone, fax, e-mail, e-mail2, password and confirmation. The

11 system may require certain fields for user information, including last name, first name,

12 e-mail and phone. The system may include this information in e-mails which may be

13 sent through the system and may also make this information available to biller and

14 payer system administrators.

15   The system may permit a biller system user to select an option 605 to display

16 invoices based on selected criteria and/or specify general search criteria for listing

17 invoices. Depending on the selection, the system may direct the user to a "view

18 options" page 606 for filtering and sorting. The system may provide a view options

19 page 606 to allow the user control over the subset of data that will be displayed and

20 the order in which the data will be presented. To further facilitate the presentation of

21 invoices, the system may permit settings associated with a specific report to be

22 automatically saved and used again the next time the user generates the report.

23 Considering the time it may take to generate certain reports (e.g. lengthy reports), the

24 system may also provide an option to bring this page up before running a report, to

25 limit the scope and time. The view options page may consist of three exemplary

26 areas: filter, sort and options. In the filter area, the system may provide the following

27 exemplary choices: by date (past due, eligible for discount, due within xxx days); and

28 by status (paid invoices, adjusted invoices, unpaid invoices, paid through another

29 source); and by payer (all payer, specific payer); and by attribute range between xxx

30 and yyy (none, invoice numbers, store / location, purchase orders, purchase request

31 number, invoice issue dates, dollar amount, bill of lading numbers, receiving location

1   zipcodes, invoice aging). The system may also provide the ability to search for invoice

2   number, store or location number, routing number and P.O. number, by using

3   wildcards. The system may provide a sort area to allow returned results to be sorted

4   in ascending or descending order according to the following exemplary criteria: due

5   date, invoice number, invoice date, purchase order number, net amount due, store or

6   location number, and invoice aging. In one embodiment, the system may allow sorting

7   criteria and order to be determined by a sort order combo box, which may default to

8   ascending, and three sort criteria boxes, the first of which defaults to due date, while

9   the rest default to no sort criteria (spaces). The system may provide an options area

10 with the following exemplary choices: display all in one page or show count (with the

11 default being all in one page), remember and use previous settings, and show view

12 options page before presentation. The system may be adapted to store filter, sort, and

13 options data as global information on the database.

14   The system may allow a biller system user to select an option to display a page

15 607 for listing invoices matching specified criteria. The system may display at this

16 screen the filter/sort criteria that are in use for this display. The system may display

17 invoices using a paging concept (i.e. 1 – 20 of 362). When displaying invoices, the

18 system may remove any existing navigation area, so as to optimize the invoice display

19 area. In one embodiment, the system may display a page separated into two sections,

20 with the header section containing non-scrolling data and/or buttons and the body

21 section that scrolls as necessary, depending upon the width of the browser window

22 and the number of invoices being displayed. The header section may contain the

23 following elements:

24 • The user's selection criteria, i.e., All Invoices – Past due.

25 • The display range text in the format of first – last of maximum, i.e., 1-20 of 200.

26 • "Next 'n'" may cause the system to navigate the user to the next "n" invoices, i.e.,

27   "Next 20". If the last "n" invoices are currently being displayed the system may

28   disable the "Next" button.

29 • "Previous 'n'" may cause the system to navigate the user to the previous "n"

30   invoices, i.e., "Previous 20". If the first "n" invoices are currently being displayed the

31   system may disable the "Previous" button.

1   • "All" may cause the system to change the mode from displaying a page of invoices
2   to displaying all invoices, and the system may label the button "Page", i.e., 1-200 of
3   200. If the "Page" button is selected, the system may display at this page the first
4   "n" invoices, and system may label the button "All".
5   • "Back" may cause the system to return to the previous screen, step, or function.
6   • "Search" may cause the system to perform a search in the current invoice list by
7   using the "Find" feature. The system may permit only the invoices currently being
8   displayed to be searched. The system may allow the user to type a string to search
9   for before selecting the "Search" button. The system may search each invoice may
10   for the specified string. If a match is found, the system may scroll the invoice
11   record into view and select the text found. Selecting "Search" again may cause the
12   system to find the next instance of the string. The system may permit wildcard
13   searches.
14   • "Show Selected" may cause the system to display all invoices that have been
15   manually checked. In the last column of the invoice list, the system may allow a
16   user to select individual invoices. While the user remains on this page, the system
17   may maintain in a list all invoices that are marked as selected. If the user switches
18   the context of this view, the system may not remove any selection made by the
19   user. Clicking on the "Show Selected" button may cause the system to display all
20   the invoices the user has selected. The system may change this button to either
21   "Page" or "All", depending on the state of the selection when this button was
22   pressed. Selecting this button again may cause the system to return the invoice list
23   to its previous mode. The system may display all selected invoices, even if they
24   exceed the page limit.
25   • "Close" 608 may cause the system to mark as closed all invoices that are selected.
26   The system may display to the user a confirmation message before the invoices
27   are closed, e.g., "You have selected 24 invoices to close. Are you sure you want to
28   close these invoices?" The system may not permit closed invoices to appear in any
29   active queries. The system may subject invoices that are marked as closed to host
30   archiving and purging criteria.

31

1   • "Paid Through Another Source" may be provided by the system as an option for the

2   biller system user to mark an invoice as closed by selecting desired invoices and

3   clicking on the "Paid through another source" button. Once this occurs, the system

4   may, for the invoices in question, update their audit trail to reflect that they were

5   paid outside the system, and then change their status to "Closed".

6 In the body section, the system may display all invoices in table format. The width of

7 the table columns may be proportional to the width of the browser window. If the

8 browser window is narrowed, the system may decrease column widths appropriately

9 and wrap text within each column, as necessary. If an invoice has adjustments, the

10 system may highlight that line in color to indicate this fact. The system may link the

11 invoice number field to the invoice detail page. The system may link the status field to

12 the invoice history page, at which the system may display a full status history for the

13 selected invoice. By default, the system may display the following exemplary columns:

14 payer name, invoice number, due date, status, net amount due, amount to pay, P.O.

15 number, P.O. requisition number, store number, and select.

16   The system may permit the biller system user to select an option to display the

17 details of a selected invoice, which may cause the system to direct the user to an

18 invoice detail section 610. The system may use one or more predetermined,

19 customizable and/or selectable template schema (which may be stored as global

20 information on the database) to format the biller detail, and the system may provide a

21 single biller multiple templates from which to select. The invoice detail page may

22 contain various sections. One section may display summary information for the

23 selected invoice, information about the biller, information about the particular invoice,

24 and/or information about the payer. The system may provide selectable buttons for

25 obtaining more information about the current invoice, e.g., items 611, messages 612,

26 e-mail 613, status 614, shipping info 615, discounts 616, and notes 617. The system

27 may display line items that have been adjusted in a different color. Upon selection by

28 a user of the items button 611, the system may toggle the header view from showing a

29 detailed header description to allowing the user to perform basic search operations on

30 the details of this invoice. The items button 611 may cause the system to toggle to

31 header. Clicking on the header button may cause the system to return to the previous

1   view, thereby providing more space for viewing details on the current page, as follows.

2   Another section may contain the line items that make up the invoice. The system may

3   color code highlight line items that have been adjusted. Each line may have a clickable

4   line number. Clicking a line item's number may cause the system to expand the line to

5   show its detail. Clicking a particular adjustment may cause the system to display a

6   window with details about that specific adjustment. Another section may contain the

7   invoice summary. For both the original amount billed and the amount to pay, the

8   system may calculate and display the following: gross total invoice; time conditional

9   discount; other discount / charge; a general adjustments link displays the general

10   adjustment that was entered for this invoice (the system may only present this link if

11   this invoice has a general adjustment; the system may show each general adjustment

12   separately; and the system may permit general adjustments to be removed); sales tax;

13   other tax; and net amount due.

14   The system may, upon selection of the messages button 612, display a new

15   browser window 622 allowing the biller system user to enter a new message for the

16   payer associated with the current invoice. The system may permit new messages to

17   be entered into a textbox and sent by pressing a "save" button. The system may

18   provide a "cancel" button for discarding the current message and returning to the

19   invoice detail page. The system may provide a discounts button 616 for opening a

20   separate browser window 626 displaying discounts information for the current invoice,

21   including, e.g., time conditional discount %; time conditional discount amount; time

22   conditional discount date; invoice date; and unconditional discount or charge. The

23   system may provide a shipping info button 615, which may cause the system to

24   display additional shipping information for this invoice in a separate browser window

25   625, including, e.g., ship to location, date shipped, carrier, bill of lading number, terms,

26   units, unit code, weight, volume, package dimensions, package contents, and notes.

27   The system may provide a notes button 617 for opening a separate browser window

28   627 containing a list of entered notes for this invoice. In the separate browser window,

29   the system may permit the user to enter new notes into a new note textbox and save

30   them by clicking an "add note" button. Clicking a "cancel" button may cause the

31   system to return the user to the invoice detail page, discarding any new notes. The

1   system may automatically log adjustment notes and biller disputes as notes for the

2   current invoice. The system may provide an e-mail button 613 for opening a separate

3   browser window 623 with a new e-mail referencing the selected invoice. The system

4   may permit the user to enter an e-mail message to selected users about the current

5   invoice. The system may permit e-mail to be sent to the recipients that are picked from

6   the recipients list, the contents of which may be based on the e-mail distribution list set

7   up by the payer system administrator. The system may provide a status button 614 for

8   opening a separate browser window 624 displaying a page containing the status

9   history for the selected invoice, including, e.g., date / time, user ID, and user name and

10 status. The system may further provide adjustment buttons, e.g., general adjustment

11 618, quantity adjustment 619, price adjustment 620, and allowance 621, at the invoice

12 detail 610 section.   The system may permit a general adjustment button 618 to be

13 selected to open a separate browser window 628 containing general adjustment

14 information for this invoice. This information may be read-only and may include the

15 following exemplary items of information: adjustment amount, reason code, and notes.

16 The system may permit a quantity adjustment button 619 to be selected for a specific

17 invoice line item to open a separate browser window 629 containing quantity

18 adjustment information for that line item. This information may be read only and may

19 include the following exemplary items of information: adjustment quantity, reason

20 code, and notes. The system may permit a price adjustment button 620 to be selected

21 for a specific invoice line item to open a separate browser window containing price

22 adjustment information for that line item. This information may be read only and may

23 include the following exemplary items of information: new price, reason code, and

24 notes. The system may permit an allowance button 621 to be selected for a specific

25 invoice line item to open a separate browser window 631 containing allowance

26 information for that line item. This information may be read only and may include the

27 following exemplary items of information: allowance amount, reason code, and notes.

28

29   The system may make other options available to the biller system user for

30 selection, e.g. an items button for displaying the invoice details in item view. The

31 system may, upon selection of such an button, remove the header from the invoice

1 details and all but the net amount due field of the footer, thereby allowing more screen

2 space to be used for the presentation of invoices. The system may provide a search

3 function for performing a search in the current invoice list. The system may permit

4 only the invoices currently being displayed to be searched. The system may allow the

5 user to type a string to search for before selecting the "Search" button. The system

6 may search each invoice may for the specified string. If a match is found, the system

7 may scroll the invoice record into view and select the text found. Selecting "Search"

8 again may cause the system to find the next instance of the string. The system may

9 permit wildcard searches. The system may provide clickable line numbers in the items

10 view line, whereby upon clicking a line item's number, the system may expand the line

11 to show its invoices, and clicking a particular adjustment may cause the system to

12 bring up a window with details about that specific adjustment.

13   The system may permit the biller system user to select an option 608 to retrieve

14 all closed invoices in the system subject to the criteria set in the view options page and

15 may provide the additional option of restoring selected invoices that have been closed

16 into the current collection. The system may move invoices that have been checked to

17 the open state when the user selects an "open" button.

18   The system may permit the biller system user to select an option 632 to export

19 files, i.e. to download data directly from the server, bypassing the need to have the

20 data flow through a transmission to the biller system user. Selecting the export files

21 option 632 may cause the system to direct the user to the invoice export section 633,

22 from which the user may either edit export templates or export files. Upon selection of

23 edit export templates, the system may allow the biller system user to edit the

24 templates used in file export. An export templates listbox may show the present export

25 templates while a template settings area may contain all the attributes and settings of

26 the current selected template. Upon selection of a template from the export templates

27 listbox, the system may populate the fields of the template settings area. In this area,

28 the system may allow the biller system user to add, modify, or delete file export

29 templates by using a set of buttons or controls. The set of invoices to be exported

30 may be based on the invoices that are being viewed at the time export is chosen. The

31 system may permit the user to set that filter through the filter/sort page. The template

1 settings area may contain the following exemplary controls (which the system may be

2 adapted to store as global information on the database): fields and export order (may

3 contain a listbox of the available invoice fields and an ordered listbox of fields marked

4 for export with two buttons for moving fields between listboxes; up and down buttons

5 may allow the field export order to be changed); and file formats (a listbox that allows

6 the file format to be selected; if ASCII is chosen a delimiter section may be displayed

7 and the user may need to select field and record delimiters). The system may provide .

8 a "set default" button for allowing the user to set the current template as the default

9 template for the file export page. Upon selecting file export, the system may allow the

10 biller system user to export invoices based on an export template. In the templates

11 listbox, the system may show the present export templates while the export range may

12 allow the user to select the date range criteria for including invoices in the export. In

13 the templates list, the system may default to the template set as default from the edit

14 export templates page; if no default template was set, the system may select the first

15 entry in the listbox. An "export" button may cause the system to perform the file export,

16 while a "cancel" button may cause the system to abort. The system may be adapted

17 to export files in such exemplary formats as 810 for invoices, 820 for payments, XML,

18 delimited files, and fixed-length PayBase^{TM} compatible files.

19   The system may permit the biller system user to select a reports option 604,

20 which may cause the system to display subcategories that correspond to the available

21 reports. Exemplary reports may include: paid invoices 641, total invoices 642,

22 adjusted invoices 643, pending invoices 644, closed invoices 645, credit notes 646,

23 and statistics 647. Other exemplary reports may include cashflow forecasting, aged

24 outstanding invoice, returned items, modified invoice history, biller profile

25 maintenance, payment history, and outstanding invoice status. The system may

26 permit the user to select from among various reporting options and/or filters 648

27 (which the system may be adapted to store as global information on the database),

28 and the system may then generate a report 649 for viewing and/or printing.

29   **Biller System Administration Workflow**

30   Figures 7a, 7b, and 7c illustrate[s] an exemplary biller system administration

31 workflow in one embodiment of the system. From the administration 700 screen, the

36

1   system may permit a biller system administrator to select from among functions

2   including, e.g., edit biller profile 701, archive/purge 710, edit banks 702, edit users

3   703, edit event e-mails 704, edit payers 705, adjustments 706, edit export template

4   733, and password/profile change 735.

5   Upon selection by the biller system administrator of the edit biller profile 701

6   function, the system may redirect the biller system administrator to a biller profile

7   section 707 for editing the biller's profile information. The system may permit company

8   data to be entered and/or edited for the following exemplary fields (which the system

9   may be adapted to store as global information on the database): name, address, city,

10   state, zip, country, SIC code, TIN, and default template type. From the biller profile

11   section 707, the system may permit the biller system administrator to select a function

12   for editing logos and websites, which may cause the system to direct the administrator

13   to a logo and website editing page 708, wherein the administrator may edit the biller's

14   logos and available websites (which the system may be adapted to store as global

15   information on the database). The system may display a list of billers, and the

16   selection of a biller from the list may cause the system to populate the company

17   information area with details about the current biller. For each biller, the system may

18   permit a list of company logos and websites to be edited. The system may permit new

19   logos to be made available to the system with an "add" button for uploading the logo

20   file, and the system may likewise permit logos to be removed from the system with a

21   "remove" button. The system may display a list of websites via a listbox containing the

22   sites and a site details edit area. Selecting a website in the list may cause the system

23   to populate the site details section. The system may permit the URL, description, and

24   type of website to be edited. The system may provide a delete button for removing a

25   site from the list and a save button for saving the current website. The system may

26   provide a new site button for emptying the edit area to allow a new site to be entered

27   and saved. The system may provide selectable links for accessing the biller's

28   enrollment page and biller profile page. The system may permit the administrator to

29   select a template editing function, which may cause the system to direct the user to a

30   template editing section 709. In the template editing section, the system may permit

31   one or more predetermined, customizable and/or selectable template schema (which

1 the system may be adapted to store as global information on the database) to be

2 established and/or edited to format the biller detail, and the system may provide a

3 single biller multiple templates from which to select.

4   The system may permit the administrator to select an archive/purge 710

5 function, wherein the system may direct the administrator to an archive/purge section

6 711. In this section, the system may permit the administrator to select functions for

7 archiving (which the system may be adapted to store as global information on the

8 database), including archiving data to a separate table, modifying options controlling

9 when archiving is to occur (e.g. if an invoice stays in the "Presented" or "Viewed" state

10 for more than X days; if an invoice stays in the "Paid" state for more than X days;

11 and/or when an invoice is closed, it may be automatically archived); and reporting

12 against archived data. The system may provide purging features (which the system

13 may be adapted to store as global information on the database), including purging

14 records only from the archive table(s); modifying options controlling when to purge

15 (e.g. purge records after X days in archive; or manual purge).

16   Upon selection by the biller system administrator of the edit banks 702 function,

17 the system may redirect the biller system administrator to a biller bank editing section

18 712 for allowing the bank information associated with the biller to be edited. It is

19 contemplated that a biller may have multiple banks with each bank having multiple

20 bank accounts. An exemplary edit banks 712 section may be separated into two

21 sections. In the first section, the system may display the following exemplary fields

22 (which the system may be adapted to store as global information on the database):

23 name, address, city, state, zip code, country, country#, account # and RTN. The

24 system may utilize a MOD9 or similar algorithm to verify valid routing numbers. In a

25 second section, the system may display for the selected bank a "holidays" list-box

26 populated with all bank holidays associated with this bank. Selecting an existing bank

27 holiday from this list box may cause the system to delete the entry. Selecting a delete

28 button may cause the system to delete the selected bank holiday. The system may

29 provide combo-boxes for month, day and year selection. Selecting an add button may

30 cause the system to add the selected date to the holiday list-box. If a bank is added

1   with, or is caused to have no holidays through later modification, the system may

2   display a warning to the user.

3   The system may permit the administrator to select a "users" 703 function,

4   wherein the system may direct the administrator to an edit user section 713. In this

5   section, the system may permit the administrator to add, modify or delete users

6   associated with the current biller. At this page, the system may display the name of the

7   biller at the top to establish the context of the edit. The system may populate a list box

8   with the selected biller system's user names. As the administrator clicks on each user,

9   the system may display the user's information in a user information section. The

10 system may permit the administrator to add a new user to the current biller by entering

11 information into the user information section. The system may require that the

12 combination of last name, middle initial and first name be unique. The system may

13 permit modify and delete operations to be performed on the currently selected user.

14 The system may provide a checkbox for temporarily deactivating a user. The system

15 may maintain contact information (which the system may be adapted to store as global

16 information on the database), including, e.g., last name, first, middle, phone, fax, e-

17 mail, e-mail2, user ID, password, confirmation, language and privilege group. The

18 system may require certain fields for user information, such as last name, first name,

19 e-mail and phone. The system may provide a reset password button for resetting the

20 selected user's password to the default setting. The system may automatically send

21 an e-mail to a new user after they have been added, telling the user how to connect

22 and logon to the system. As described above with reference to the host user

23 modifying privilege information, the system may similarly permit a biller system

24 administrator to access a permissions section 715 for modifying permission/privilege

25 information (which the system may be adapted to store as global information on the

26 database).

27   Upon selection by the biller system administrator of the event e-mails 704

28 function, the system may direct the biller system administrator to an event e-mail

29 section 714. In this section, the system may permit biller system users to be

30 associated with specific system events, which associations the system may be

31 adapted to store as global information on the database. Any time one of these specific

1   events occurs, the system may generate an automatic e-mail and send it to the

2   selected list of biller system users. For example, exemplary distribution list choices

3   may include: invoices loaded successfully, invoices loaded unsuccessfully, invoice

4   adjusted, payment authorized, payment canceled, payment completed, and payment

5   notification. The system may display on this page a list-box that contains all biller

6   system users currently in the selected distribution list and a list-box that contains all

7   biller system users currently not in the selected distribution list. In one embodiment,

8   the system may provide two buttons to allow users to be added or removed from the

9   distribution list. The system may permit a default e-mail address to be set up for each

10   event, e.g. the biller system administrator. The system may permit the user to remove

11   this value and/or add to the list. The system may send an automatic e-mail to one or

12   more biller system users when a payment is made. The system may send a summary

13   of the payments made to each biller that has payments in the given payment run. The

14   system may send to designated biller system users an e-mail with the following

15   exemplary information: summary of payments made on today's date, payer name;

16   payer number; total number of payments; and total amount of payments.

17   The system may further direct the biller system administrator, upon selection of

18   the payers feature 705, to selections for performing tasks including options 716,

19   adjustments 717, close invoices 718 and e-mail 719. Selecting the options 716 task

20   may direct the biller system administrator to a payer options 720 section, where

21   options for a specific payer may be entered and/or edited. The system may display, at

22   the payer options page, a list-box with all the payers related to the biller, with the

23   system pre-selecting the most recently selected payer in this session by default. If no

24   payer has previously been selected, then the system may not pre-select a payer in the

25   list box. For the selected payer, the system may display the following exemplary payer

26   options (which the system may be adapted to store as global information on the

27   database): hide line items from invoice listing; allow payments; include signature; web

28   site selection (which may be displayed using one or more multiple select listboxes);

29   logo selection; payer ID; payment methods and account section (may cause the

30   system to associate payment methods with biller account, and may include a set

31   default button to establish the biller's default method and account); set default payment

1 method and account; marketing message; legal text; and payer model. The system

2 may provide a load default button to fill in all fields with the default entries. The system

3 may provide a save default button to save the current entries as the default settings.

4 Hitting the save button may cause the system to save the current payer's options,

5 while hitting the cancel button may cause the system to discard any changes.

6 Selecting the adjustments task may cause the system to direct the biller system

7 administrator to an adjustments section 721, where the system may permit the

8 administrator to establish adjustments available to a specific payer and establish an e-

9 mail notification list. The system may provide a checkbox for enabling and disabling

10 disputes. If disputes are enabled, the system may make available for selection in a

11 listbox the adjustments that the biller will allow the payer system users to make. The

12 system, through the adjustments listbox, may enable the actual selection of

13 adjustments available to the payer system users. The system may make all

14 adjustments selected be available as long as the enable disputes checkbox is

15 checked. The system may also provide a checkbox for e-mailing one or more biller

16 system users on adjustments. If this option is selected, the system may enable a

17 mailing list button for sending automatic e-mails. The system may send to designated

18 biller system users an e-mail for each adjustment made with the following exemplary

19 information: "the following adjustment was made by payer name on today's date";

20 payer number; invoice number; adjustment type; adjustment amount; and adjustment

21 reason. If there is no address set up to receive this e-mail, the system may send an e-

22 mail message by default to the biller system administrator. The system may permit a

23 mailing list function 722 may be accessed by the biller system administrator for

24 modifying mailing list settings (which may be stored as global information on the

25 database). The system may provide a close invoice function 718 for directing the biller

26 system administrator to a close invoice section 723 to establish invoice-closing criteria

27 for each payer. The system may only permit invoices with the status of "paid",

28 "presented", or "viewed" to be closed. All other invoice states may indicate payer

29 workflow is in progress, and the system may not permit invoices having such states to

30 be closed. At the payer invoice close page 723, the system may display a list-box with

31 all the payers related to the biller, with the system pre-selecting the most recently

1   selected payer in this session by default. If no payer has previously been selected,

2   then the system may not pre-select a payer from the list-box. For the selected payer,

3   the system may present invoice closing criteria. The system may process criteria

4   entered during the next nightly sweep. The system may mark as closed invoices that

5   meet the closing criteria. Selecting the e-mail 719 task may cause the system to direct

6   the biller system administrator to a payer e-mail 724 section for associating a list of

7   biller system users with a specific payer (which associations the system may be

8   adapted to store as global information on the database). At the payer e-mail page

9   724, the system may display a list-box with all the payers related to the biller. The

10   system may pre-select the most recently selected payer in this session by default. If no

11   payer has previously been selected, then the system may not pre-select a payer from

12   the list-box. For the selected payer, the system may display a page having a list-box

13   that contains all biller system users currently related to the payer and a list-box that

14   contains all biller system users currently unrelated to the payer. The system may

15   provide two buttons to allow users to be added or removed from the related list.

16   If the biller system administrator selects the adjustments 706 feature, the

17   system may further direct the biller system administrator to selections for performing

18   adjustment tasks including general 725, quantity 726, price 727, and line item

19   allowance 728. When a new biller is created on the channel host, the system may

20   give it a full set of the default adjustments for each of the four types (general, quantity,

21   price, line item allowance). These system may permit these adjustments to be

22   modified, added to, or deleted, allowing full customization by the biller. The system

23   may provide a feature for restoring adjustments to the initial defaults. Selecting the

24   general 725 button may cause the biller system administrator to be directed to a

25   general adjustment codes page 729, wherein the system may permit global general

26   adjustment codes to be edited. At this page 729, the system may display an

27   adjustment list-box and an adjustment information area. The system may permit

28   adjustments to be selected from the list-box to be edited or deleted. The system may

29   permit new adjustments to be added by selecting an add button. The system may

30   make adjustments entered here available to all of the biller's payers in the system.

31   Exemplary associated fields may include: code and description. Selecting the quantity

1   726 button may cause the system to direct the biller system administrator to a quantity

2   adjustment codes page 730, wherein the system may permit global quantity

3   adjustment codes to be edited. At this page 730, the system may display an

4   adjustment list-box and an adjustment information area. The system may permit

5   adjustments to be selected from the list-box to be edited or deleted. The system may

6   permit new adjustments to be added by selecting an add button. The system may

7   make adjustments entered here available to all of the biller's payers in the system.

8   Exemplary associated fields may include: code, description, threshold amount (which

9   may only be active if "user defined" is not selected), and a "user defined" checkbox.

10   Selecting the price 727 button may cause the system to direct the biller system

11   administrator to a price adjustment codes page 731, wherein the system may permit

12   global price adjustment codes to be edited. At this page 731, the system may display

13   an adjustment list-box and an adjustment information area. The system may permit

14   adjustments to be selected from the list-box to be edited or deleted. The system may

15   permit new adjustments to be added by selecting an add button. The system may

16   make adjustments entered here available to all of the biller's payers in the system.

17   Exemplary associated fields may include: code, description, threshold amount (which

18   may only be active if "user defined" is not selected), and a "user defined" checkbox.

19   Selecting the line item allowance button 728 may cause the system to direct the biller

20   system administrator to a line item allowance adjustment codes page 732, wherein the

21   system may permit global discount adjustment codes to be edited. At this page 732,

22   the system may display an adjustment list-box and an adjustment information area.

23   The system may permit adjustments to be selected from the list-box to be edited or

24   deleted. The system may permit new adjustments to be added by selecting an add

25   button. The system may make adjustments entered here available to all of the biller's

26   payers in the system.   Exemplary associated fields may include: code, description,

27   amount (percentage), fixed or scaled, number of days, and a "penalty assessed"

28   checkbox.

29   The system may permit selection of an edit export templates 733 function for

30   allowing the biller system administrator to edit the templates used in file export in an

31   edit export template section 734. The system may display an export templates listbox

1 showing the present export templates. In the template settings area, the system may

2 display all the attributes and settings of the current selected template. Selecting a

3 template from the export templates listbox may cause the system to populate the fields

4 of the template settings area. In this area, the system may allow the biller system user

5 to add, modify, or delete file export templates by using a set of buttons or controls.

6 The set of invoices to be exported may be based on the invoices that are being viewed

7 at the time export is chosen. The system may permit the user to set that filter through

8 the filter/sort page. The template settings area may contain the following exemplary

9 controls (which the system may be adapted to store as global information on the

10 database): fields and export order (may contain a listbox of the available invoice fields

11 and an ordered listbox of fields marked for export with two buttons for moving fields

12 between listboxes; via up and down buttons, the system may allow the field export

13 order to be changed); and file formats (a listbox that allows the file format to be

14 selected; if ASCII is chosen a delimiter section may be displayed and the system may

15 require the user to select field and record delimiters). The system may provide a "set

16 default" button for allowing the user to set the current template as the default template

17 for the file export page. By selecting file export, the system may allow the biller

18 system user to export invoices based on an export template. In the templates listbox,

19 the system may show the present export templates, while, in the export range, the

20 system may permit selection of the date range criteria for including invoices in the

21 export. In the templates list, the system may default to the template set as default

22 from the edit export templates page; if no default template was set, the system may

23 pre-select the first entry in the listbox. The system may provide an "export" button for

24 performing the file export and a "cancel" button for aborting.

25   The system may provide a password/profile change button 735 for directing the

26 biller system administrator to a password/profile change section 736 for changing

27 password and/or profile information.

28   **Payer System Workflow**

29   Figures 8a, 8b, and 8c illustrate[s] an exemplary payer system workflow in one

30 embodiment of the system. When a user logs in 801 to the system using the user ID

31 of a payer, the system may display a payer system administration or "welcome" page

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1   802. The system may display the user's name at the top in the form of a "Welcome

2   'Username'" message, for personalization. The system may display at a payer system

3   administration page key payer statistics and a list of "action items" with current counts,

4   amounts in local currency and links to the corresponding pages, as well as information

5   about the basic functionality of the main topics. The system may also display at this

6   page information provided by the administrative user regarding how to contact the

7   administrative user. The current counts may include invoices due today, invoices due

8   tomorrow, invoices that will lose a discount today, invoices that will lose a discount

9   tomorrow, invoices past due, invoices outstanding with adjustments, total invoices,

10   verified invoices, initiated payments, authorized payments, and pending payments.

11   The system may provide a selection to the user for filtering and/or sorting the counts.

12   The system may display a biller list, which may include all billers that the payer has a

13   relationship with in the system. The system may permit the payer system user to click

14   on any biller to get a list of invoices from that biller. The system may permit the payer

15   system user to return to this page by clicking on a link that may be present on every

16   page during system access. One area of the screen may contain navigation buttons

17   grouped into categories, e.g., invoices due today 803, invoices due tomorrow 804,

18   invoices that will lose a discount today 805, invoices that will lose a discount tomorrow

19   806, invoices past due 807, outstanding invoices with adjustments 808, total invoices

20   809, and verified invoices 810, all of which may link to an invoice list page 821 to

21   display the desired invoices. Other navigation buttons may include initiated payments

22   811 (which may link to the initiate payment page), authorized payments 812 (which

23   may link to the authorize payment page), pending payments 813 (which may link to the

24   pending payments page), administration 814 (discussed further hereinbelow at "Payer

25   System Administration"), invoices/payments 815, reports 816, and biller directory 817.

26   The system may expand these categories into subcategories that modify another

27   portion of the screen. One area of the navigation frame may contain the user name

28   (not the user ID) who is logged on. The system may allow the user to click on this link

29   to modify his or her basic profile information. The system may provide other

30   functionality, including a "help" button 818 for directing the user to a help section 819

31   and a "logout" button 820 for logging the current user out of the system.

1   The system may allow the payer system user to select an option to edit the
2   active user profile, wherein the system may direct the payer system user may be
3   directed to a page displaying the organization name of the payer at the top, to
4   establish the context of the current edit. The system may permit information to be
5   maintained and edited at this page and may store the information as global
6   information on the database, e.g., last name, first, middle, phone, fax, e-mail, e-mail2,
7   password and confirmation. The system may require certain fields for user information,
8   including last name, first name, e-mail and phone. The system may include this
9   information in e-mails which may be sent through the system and may also make this
10   information available to biller and payer system administrators.
11   If the payer system user selects invoices due today 803, invoices due tomorrow
12   804, invoices that will lose a discount today 805, invoices that will lose a discount
13   tomorrow 806, invoices past due 807, outstanding invoices with adjustments 808, total
14   invoices 809, or verified invoices 810, the system may direct the payer system user to
15   an invoice list page 821 for displaying invoices which meet the corresponding chosen
16   parameters. At the invoice list page 821, the system may display to the payer system
17   user invoices based on selected criteria and/or allow the payer system user to specify
18   general search criteria for listing invoices. Depending on the selection, the system
19   may direct the user to a "view options" page 822 for filtering and sorting. At the view
20   options page 822, the system may allow the user control over the subset of data that
21   will be displayed and the order in which the data will be presented. To further facilitate
22   the presentation of invoices, the system may automatically save settings associated
23   with a specific report (which may be stored as global information on the database) and
24   allow them to be used again the next time the user generates the report. Considering
25   the time it may take to generate certain reports (e.g. lengthy reports), the system may
26   also provide an option to bring this page up before running a report, to limit the scope
27   and time. The view options page may consist of three exemplary areas: extract, sort
28   and options. In the extract area, the system may provide the following exemplary
29   choices: by date (past due, eligible for discount, due within xxx days); and by status
30   (paid invoices, adjusted invoices, unpaid invoices, paid through another source); and
31   by biller (all biller, specific biller); and by attribute range between xxx and yyy (none,

invoice numbers, store / location, purchase orders, purchase request number, invoice issue dates, dollar amount, bill of lading numbers, receiving location zipcodes, invoice aging). The system may also provide the ability to search for invoice number, store or location number, routing number and P.O. number by using wildcards. The system may provide a sort area to allow returned results to be sorted in ascending or descending order according to the following exemplary criteria: due date, invoice number, invoice date, purchase order number, net amount due, store or location number, and invoice aging. In one embodiment, the system may determine sorting criteria and order by a sort order combo box, which may default to ascending, and three sort criteria boxes, the first of which may default to due date, while the rest may default to no sort criteria (spaces). The system may provide an options area with the following exemplary choices: define page size (for displaying invoices in a paging method), remember and use previous settings, and show view options page before presentation. The system may be adapted to store extract, sort, and options data as global information on the database.

The system may allow a payer system user to select an option 821 to list invoices matching specified criteria. The system may display at this screen the filter/sort criteria that are in use for this display. The system may display invoices using a paging concept (i.e. 1 – 20 of 362). When displaying invoices, the system may remove any existing navigation area, so as to optimize the invoice display area. In one embodiment, the system may display a page separated into two sections, with the header section containing non-scrolling data and/or buttons and the body section that scrolls as necessary, depending upon the width of the browser window and the number of invoices being displayed. The header section may contain the following elements:

- The user's selection criteria, i.e., All Invoices – Past due.
- The display range text in the format of first – last of maximum, i.e., 1-20 of 200.
- "Next 'n'" may cause the system to navigate the user to the next "n" invoices, i.e., "Next 20". If the last "n" invoices are currently being displayed the system may disable the "Next" button.

- "Previous 'n'" may cause the system to navigate the user to the previous "n" invoices, i.e., "Previous 20". If the first "n" invoices are currently being displayed the system may disable the "Previous" button.
- "All" may cause the system to change the mode from displaying a page of invoices to displaying all invoices and the system may label the button "Page", i.e., 1-200 of 200. If the "Page" button is selected, the system may display at this page the first "n" invoices, and the system may label the button "All".
- "Back" may cause the system to return to the previous screen, step, or function.
- "Search" may cause the system to perform a search in the current invoice list by using the "Find" feature. The system may permit only the invoices currently being displayed to be searched. The system may allow the user to type a string to search for before selecting the "Search" button. The system may search each invoice for the specified string. If a match is found, the system may scroll the invoice record into view and select the text found. Selecting "Search" again may cause the system to find the next instance of the string. The system may permit wildcard searches.
- "Show Selected" may cause the system to display all invoices that have been manually checked. In the last column of the invoice list, the system may allow a user to select individual invoices. While the user remains on this page, the system may maintain in a list all invoices that are marked as selected. If the user switches the context of this view, the system may not remove any selection made by the user. Clicking on the "Show Selected" button may cause the system to display all the invoices the user has selected. The system may change this button may change to either "Page" or "All", depending on the state of the selection when this button was pressed. Selecting this button again may cause the system to return the invoice list to its previous mode. The system may display all Selected invoices, even if they exceed the page limit.
- "Paid Through Another Source" may be provided by the system as an option for the payer system user to mark an invoice as closed by selecting desired invoices and clicking on the "Paid through another source" button. Once this occurs, the system may, for the invoices in question, update their audit trail to

1   reflect that they were paid outside the system, and then change their status to

2   "Closed".

3   In the body section, the system may display all invoices in table format. The width of

4   the table columns may be proportional to the width of the browser window. If the

5   browser window is narrowed, the system may decrease column widths appropriately

6   and wrap text within each column, as necessary. If an invoice has adjustments, the

7   system may highlight that line in color to indicate this fact. The system may link the

8   invoice number field to the invoice detail page. The system may link the status field to

9   the invoice history page, at which the system may display a full status history for the

10 selected invoice. By default, the system may display the following exemplary columns:

11 biller name (and/or logo(s)), invoice number, due date, status, net amount due,

12 amount to pay, and select. The payer system administrator may optionally elect to

13 display additional columns (e.g., P.O. number, P.O. requisition number, store number)

14 by setting them in the payer profile (which may be stored as global information on the

15 database).

16   The system may permit the payer system user to select an option 823 to display

17 the details of a selected invoice, which may cause the system to direct the user to an

18 invoice detail section 610. The system may use one or more predetermined,

19 customizable and/or selectable template schema to format the payer detail, and the

20 system may provide a single payer multiple templates from which to select. The

21 system may present detail using a selected language associated with the selected

22 payer and/or user (which the system may be adapted to store as global information on

23 the database). The invoice detail page may contain various sections. One section

24 may display summary information for the selected invoice, information about the

25 payer, information about the particular invoice, and/or information about the biller. The

26 system may provide selectable buttons for obtaining more information about the

27 current invoice, e.g., items 831, messages 832, e-mail 833, status 834, shipping info

28 835, discounts 836, and notes 837. The system may display line items that have been

29 adjusted in a different color. Upon selection by a user of the items button 831, the

30 system may toggle the header view from showing a detailed header description to

31 allowing the user to perform basic search operations on the details of this invoice. The

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1   items button 831 may cause the system to toggle to header. Clicking on the header

2   button may cause the system to return to the previous view, thereby providing more

3   space for viewing details on the current page, as follows. Another section may contain

4   the line items that make up the invoice. The system may color code highlight line

5   items that have been adjusted. Each line may have a clickable line number. Clicking a

6   line item's number may cause the system to expand the line to show its detail. Clicking

7   a particular adjustment may cause the system to display a window with details about

8   that specific adjustment. Another section may contain the invoice summary. For both

9   the original amount billed and the amount to pay, the system may calculate and

10 display the following: gross total invoice; time conditional discount; other discount /

11 charge; a general adjustments link (which may allow the general adjustment for the

12 current invoice to be entered or edited); sales tax; other tax; and net amount due.

13   The system may, upon selection of the messages button 832, display a new

14 browser window 842 displaying any messages defined by the biller system

15 administrator for this payer. Selection of the discounts button 834 may cause the

16 system to open a separate browser window 846 displaying additional discount

17 information for the current invoice, including, e.g., time conditional discount %; time

18 conditional discount amount; time conditional discount date; invoice date; and

19 unconditional discount or charge. Selection of the shipping info button 835 may cause

20 the system to display additional shipping information for this invoice in a separate

21 browser window 845, including, e.g., ship to location, date shipped, carrier, bill of

22 lading number, terms, units, unit code, weight, volume, package dimensions, package

23 contents, and notes. In addition to the invoice specific shipping information, the

24 system may list courier websites specified by the biller system administrator as links to

25 the websites of the shipping companies, for shipment tracking or other purposes.

26 Selection of the notes button 837 may cause the system to open a separate browser

27 window 847 containing a list of entered notes for this invoice. In the separate browser

28 window, the system may allow the user to enter new notes into a new note textbox and

29 save them by clicking an "add note" button. Clicking a "cancel" button may cause the

30 system to return the user to the invoice detail page and discard any new notes.

31 Selection of the e-mail button 833 may cause the system to open a separate browser

1 window 843 with a new e-mail referencing the selected invoice. The system may allow

2 the user to enter an e-mail message to selected users about the current invoice. The

3 system may send e-mail to the recipients that are picked from the recipients list (which

4 the system may be adapted to store as global information on the database), the

5 contents of which may be based on the e-mail distribution list set up by the biller

6 system administrator. Selection of the status button 834 may cause the system to

7 open a separate browser window 844 displaying a page containing the status history

8 for the selected invoice, including, e.g., date / time, user ID, and user name and status.

9 The system may further provide adjustment buttons, e.g., general adjustment 838,

10 quantity adjustment 839, price adjustment 840, and allowance 841, at the invoice

11 detail 823 section. The system may permit a general adjustment button 838 to be

12 selected to open a separate browser window 848 containing general adjustment

13 information for this invoice. This information may be read only and may include the

14 following exemplary items of information: adjustment amount, reason code, and notes.

15 The system may permit a quantity adjustment button 839 to be selected for a specific

16 invoice line item, which may cause the system to open a separate browser window

17 849 containing quantity adjustment information for that line item. This information may

18 be read only and may include the following exemplary items of information: adjustment

19 quantity, reason code, and notes. The system may permit a price adjustment button

20 840 to be selected for a specific invoice line item, which may cause the system to

21 open a separate browser window 850 containing price adjustment information for that

22 line item. This information may include the following exemplary items of information:

23 new price, reason code, and notes. The system may permit an allowance button 841

24 to be selected for a specific invoice line item, which may cause the system to open a

25 separate browser window 851 containing allowance information for that line item. This

26 information may be read only and may include the following exemplary items of

27 information: allowance amount, reason code, and notes.

28 The system may make other options available to the payer system user for

29 selection, e.g. an items button for displaying the invoice details in item view. The

30 system may, upon selection of such a button, remove the header from the invoice

31 details, and all but the net amount due field of the footer, thereby allowing more screen

1   space to be used for the presentation of invoices. The system may provide a search

2   function for performing a search in the current invoice list. The system may permit

3   only the invoices currently being displayed to be searched. The system may allow the

4   user to type a string to search for before selecting the "Search" button. The system

5   may search each invoice may for the specified string. If a match is found, the system

6   may scroll the invoice record into view and select the text found. Selecting "Search"

7   again may cause the system to find the next instance of the string. The system may

8   permit wildcard searches. The system may provide clickable line numbers in the items

9   view line, whereby upon clicking a line item's number, the system may expand the line

10   to show its invoices, and clicking a particular adjustment may cause the system to

11   bring up a window with details about that specific adjustment.

12   The system may provide other selectable options, including a website button for

13   opening a separate browser window containing links to biller-specific websites, and a

14   biller info button for displaying a new browser window containing the biller information

15   supplied for the current payer.

16   From the perspective of the payer system user, the system may identify an

17   invoice as having one of the following exemplary states: presented, viewed (an invoice

18   may be considered "viewed" when a invoice display query is built with the invoice

19   included; the user does not necessarily need to actually see the invoice to have it

20   considered viewed), verified (an invoice that is in this state may be rolled back to

21   viewed given the user has the permission to verify), payment initiated, payment

22   authorized, payment pending (an invoice in this state may be rolled back to verified

23   given the user has the permission to authorize payment), paid, and closed.

24   As illustrated in the payer invoice/payments workflow diagram of Figures 9a and

25   9b, if the payer system user selects invoice/payments 815, the system may direct him

26   or her to further select from among invoice/payment selections, which may include,

27   e.g., review invoice 901, initiate payment 902, approve/verify invoice 903, authorize

28   payment 904, pending payment 905, payment history 906, and file export 907.

29   Selecting the review invoices 901 function may cause the system to direct the

30   user to an invoice list 908, with appropriate links to invoice status 909, detail 823, and

31   sorting 910 pages. The invoice list 908, status 909, detail 823, and sorting 910 pages

1   may be functionally identical to those described above with reference to Figure 8b, at

2   ciphers 821-851.

3   Selecting the approve/verify invoices 903 function may cause the system to

4   direct the user to an approve/verify page 911 containing an invoice list, with

5   appropriate links to invoice status 923, detail 823, and sorting 913 pages. The invoice

6   list, status 923, detail 823, and sorting 913 pages may be functionally identical to those

7   described above with reference to Figure 8b, at ciphers 821-851. Via the invoice list

8   shown, the system may permit the payer system user to view all invoices in the system

9   that have not yet been approved for payment, subject to the criteria set in the view

10   options page. The system may provide appropriate functionality to approve an

11   individual invoice, approve a selection of invoices, or approve all invoices in the

12   current extract. For any invoice in the extracted set, the system may permit the user to

13   view the corresponding invoice detail page 823 or the invoice status page 923.

14   Invoices included on this page may indicate one of the following exemplary states:

15   presented, viewed, or adjusted. The system may provide appropriate functionality to

16   confirm approval of an individual invoice or group of invoices. The system may permit

17   further selection of an "approve invoices" or "verify confirm" 914 page to permit the

18   user to confirm the requested action.

19   Selecting the initiate payment 902 function may cause the system to direct the

20   user to an initiate payment page 915 containing an invoice list, with appropriate links to

21   invoice status 909, detail 823, and sorting 910 pages. The invoice list, status 909,

22   detail 823, and sorting 910 pages may be functionally identical to those described

23   above with reference to Figure 8b, at ciphers 821-851. Via the invoice list shown, the

24   system may permit the payer system user to view all invoices in the system that have

25   been approved for payment, subject to the criteria set in the view options page. The

26   system ma provide appropriate functionality to initiate payment for an individual

27   invoice, a selection of invoices, or all invoices in the current extract. For any invoice in

28   the extracted set, the system may also permit the user to view the corresponding

29   invoice detail page 823 or the invoice status page 909. The system may display an

30   "amount to pay" column, the amount shown being net of all applied credits and

31   adjustments. The system may provide appropriate functionality to perform a cancel,

1   which action may cause the system to roll back the status to viewed, detaching any

2   applied credits if necessary. The system may permit the user to toggle between the

3   discount date and the invoice due date. The system may set payment options to the

4   default value established for the current biller / payer relationship. The system may

5   page payments to accurately represent how the payment will be submitted. If the

6   selection contains applied credit notes, the system may render each in a separate

7   payment. The system may further permit the user to select a payment initiation

8   selection page 916 to confirm the requested action, i.e. to confirm payment initiation of

9   selected invoices in the system.

10   Selecting the authorize payment function 904 may cause the system to direct

11   the user to an authorization page 917 containing an invoice list, with appropriate links

12   to invoice status 912, detail 823, and sorting 913 pages. The invoice list, status 912,

13   detail 823, and sorting 913 pages may be functionally identical to those described

14   above with reference to Figure 8b, at ciphers 821-851. Via the invoice list shown, the

15   system may permit the payer system user to view all invoices in the system that have

16   had payment initiated, subject to the criteria set in the view options page. The system

17   may permit the user to click on any check number to view details for that payment

18   group.   The system may further permit the payer system user to select check boxes

19   next to payments to select those payments, and to click on an "authorize" button to

20   authorize those selected payments. The system may further permit the user to click

21   on an "authorize all" button to authorize all payments listed. The payment method may

22   be the payment option selected for this transaction, and the initiator may be the user

23   name of the user who authorized the payment. The system may permit the authorize

24   stage to be automatically bypassed if the payment amount is less than a pre-selected

25   threshold amount. The system may further permit the user to select an authorize

26   payment confirmation page 919 to confirm the requested action, i.e. to confirm

27   payment authorization of selected invoices in the system.

28   Selecting the pending payments 905 function may cause the system to direct

29   the user to a pending payment page 918 containing an invoice list, with appropriate

30   links to invoice status 912, detail 823, and sorting 913 pages. The invoice list, status

31   912, detail 823, and sorting 913 pages may be functionally identical to those described

1   above with reference to Figure 8b, at ciphers 821-851. Via the invoice list shown, the

2   system may permit the payer system user to view all pending payments in the system

3   subject to the criteria set in the view options page. The system may permit the user to

4   click on any check number to view details for that payment group. The system may

5   further permit the payer system user to select check boxes next to payments to select

6   those payments, and to click on a "cancel" button to cancel the selected payments.

7   The system may further permit the user to click on "cancel all payments" to cancel all

8   payments listed. Canceling a pending payment may cause the system to roll the

9   transaction back to the "verified" invoice state. The system may further permit the user

10   to select a cancellation confirmation page 920 to confirm the requested action, i.e. to

11   confirm canceling pending payments for selected invoices in the system.

12   Selecting the payment history 906 function may cause the system to direct the

13   user to a payment history page 921, wherein the user may view all paid invoices in the

14   system, referencing the corresponding check number, subject to the criteria set in the

15   view options page. The system may provide an invoice history page 922, whereby the

16   system may display an invoice history line for each invoice that meets the view options

17   criteria. Selecting an invoice number link may cause the system to display the

18   corresponding invoice detail page (e.g., as shown and described with respect to cipher

19   823 of Figure 8b). The system may provide an invoice status link for displaying a

20   corresponding invoice status page (e.g. as shown and described with respect to cipher

21   844 of Figure 8b).

22   The system may permit the payer system user to select an export files function

23   907, i.e., to download data directly from the server, bypassing the need to have the

24   data flow through a transmission to the payer system user. Selecting the export files

25   option 907 may cause the system to direct the user to the invoice export section 923,

26   from which the user may either edit export templates or export files. Upon selection of

27   edit export templates, the system may allow the payer system user to edit the

28   templates used in file export. An export templates listbox may shows the present

29   export templates while a template settings area may contain all the attributes and

30   settings of the current selected template. Upon selection of a template from the export

31   templates listbox, the system may populate the fields of the template settings area. In

1   this area, the system may allow the payer system user to add, modify, or delete file

2   export templates (which the system may be adapted to store as global information on

3   the database) by using a set of buttons or controls. The set of invoices to be exported

4   may be based on the invoices that are being viewed at the time export is chosen. The

5   system may permit the user to set that filter through the filter/sort page. The template

6   settings area may contain the following exemplary controls (which the system may be

7   adapted to store as global information on the database): document type, document

8   status, include (headers and/or line items), fields and export order (may contain a

9   listbox of the available invoice fields and an ordered listbox of fields marked for export

10   with two buttons for moving fields between listboxes; up and down buttons may allow

11   the field export order to be changed), file formats (a listbox that allows the file format to

12   be selected; if ASCII is chosen, the system may display a delimiter section and

13   require the user to select field and record delimiters; file formats may include X12 810,

14   "XML 810", PayBase^{TM}, and CSV). The system may provide a "set default" button for

15   allowing the user to set the current template as the default template for the file export

16   page. Upon selecting file export, the system may allow the payer system user to

17   export invoices based on an export template. N the templates listbox, the system may

18   show the present export templates while the export range may allow the user to select

19   the date range criteria for including invoices in the export. The system may provide a

20   "today" checkbox, for aiding in setting the to bounding date to the current date. An

21   "export" button may cause the system to perform the file export, while a "cancel"

22   button may cause the system to abort.

23   It is noted that the system may further permit a payer system user not only to

24   view adjusted invoices from the invoice detail screen (e.g. cipher [Figure] 823, as

25   shown in Figure 8b and described above), but also to make adjustments to an invoice.

26   In this scenario, from a user interface perspective, the system may allow the original

27   amount to remain, but may change the "amount to pay" to "amount to adjust". At the

28   bottom of the invoice, the system may add a new line that reflects the unapproved

29   amount to pay, subject to any required approval. The system may also allow credit

30   and debit notes to be entered by a payer system user, whereby credit notes may be

31   entered by a user and/or handled by the system as invoices with a negative dollar

1   amount, and debit notes entered by a user and/or handled by the system as invoices.

2   Thus, the system may permit credit requests to be entered in the same manner as

3   adjustments are entered. If a credit request is issued, the system may send an e-mail

4   to the distribution list for this event, referencing the invoice in question (i.e. invoice

5   number, date, paying company, etc.), amount of credit requested, type of adjustment,

6   adjustment code, and description of need for credit. After an invoice load, the system

7   may execute a process that sets negative dollar invoices to a "verified" status, so that

8   they will appear on the "initiate payment" list. The system may not roll back invoices

9   with a "verified" status and a negative dollar amount to "presented" or "viewed" status.

10 The system may make a report available to certain users listing all outstanding credit

11 notes, including quantity and total dollar amount.

12   As shown in the workflow diagrams of Figures 8 and 10, the system may permit

13 the payer system user to select a reports option 816, which may cause the system to

14 display subcategories that correspond to the available reports for selection.

15 Exemplary reports may include: cashflow forecasting 1001, payment history 1002,

16 security administrator statistics 1003, payer profile 1004, invoice summary 1005,

17 discount 1006, returned items 1007, outstanding invoice statistics 1008, and modified

18 invoice summary 1009. The system may permit the user to select from among various

19 reporting options and/or filters 1010 (which the system may be adapted to store as

20 global information on the database), and the system may then generate a report for

21 viewing and/or printing at a report page 1011.

22   As shown in the workflow diagram of Figures 8a, 8b, and 8c, the system may

23 permit a payer system user to select a biller directory option for displaying a screen

24 containing options which, when selected, cause the system to direct the user to pages

25 for viewing biller websites and/or e-mail addresses 860 and a biller directory 861 (i.e. a

26 list of available billers in the system). From the biller directory 861, clicking on a biller's

27 company name may cause the system to bring the user to a URL set by the biller

28 system administrator.

29   **Payer System Administration Workflow**

30   Figure 11 illustrates an exemplary payer system administration workflow in one

31 embodiment of the system. From the administration 1100 screen, the system may

57

1   permit a payer system administrator to select from among functions including, e.g.,

2   edit payer profile 1101, edit banks 1102, edit users 1103, edit event e-mails 1104, edit

3   biller agreement 1105, and password change 1106.

4   Upon selection by the payer system administrator of the edit payer profile 1101

5   function, the system may redirect the payer system administrator to a payer profile

6   section 1107 for editing the payer's profile information. The system may permit

7   company data to be entered and/or edited for the following exemplary fields (which the

8   system may be adapted to store as global information on the database): name,

9   address, city, state, zip, country, SIC code, TIN, organization type, show invoice list

10   columns, language for local country presentation, and currency for payment. The

11   system may provide additional functionality for displaying an "instant payment"

12   interface and a default settlement dates selector. At the instant payment interface, the

13   system may permit the administrator to edit the company's instant payment terms that

14   are used for payment of invoices in the system. The system may allow a payer

15   system administrator to establish a threshold payment amount for instant payment. If

16   an invoice comes in with a value less than the threshold amount, the system may be

17   adapted to immediately initiate and authorize the invoice. When the 810 is loaded, if

18   an invoice is below the threshold amount, the system may immediately create a

19   payment, place it in the pending queue, and initiate an audit trail. Instant payment

20   data (which the system may be adapted to store as global information on the

21   database) may include the following exemplary fields: Instant payment

22   (enabled/disabled), threshold amount, default account, default method of payment,

23   and default settlement date (due date or discount date). The default settlement date

24   may cause the system to provide additional functionality for the payer of having the

25   settlement date by default be the due date to receive discounts. The system may

26   provide the user the ability to change that date.

27   Upon selection by the payer system administrator of the edit banks 1102

28   function, the system may redirect the payer system administrator to a payer bank

29   editing section 1109 for allowing the bank information associated with the payer to be

30   edited. It is contemplated that a payer may have multiple banks with each bank

31   having multiple bank accounts. An exemplary edit banks 1109 section may be

1   separated into three sections. In the first section, the system may display a list-box

2   containing all the banks associated with the current payer. Selecting a bank from this

3   list may cause the system to set the context for all other sections and fields of the

4   page. For the selected bank, the system may display in a second section the following

5   exemplary fields (which the system may be adapted to store as global information on

6   the database): name, address, city, state, zip code, country, country#, account # and

7   RTN. The system may use a MOD9 or similar algorithm to verify valid routing

8   numbers. The system may provide a delete button, which may cause the system to

9   display a confirmation message before deleting the selected bank. Selecting a modify

10 button may cause the system to update the existing bank information with the modified

11 data. Selecting an add button may cause the system to add the current bank

12 information as a new bank. The system may require that the bank name and account #

13 be unique. Pressing a "set default" button may cause the system to set the current

14 bank as the default bank for making payments. In a third section, the system may

15 display for the selected bank a "holidays" list-box populated with all bank holidays

16 associated with this bank. Selecting an existing bank holiday from this list box,

17 followed by the selection of a "delete" button, may cause the system to delete the

18 selected bank holiday. The system may provide combo-boxes for month, day and year

19 selection. Selecting an add button may cause the system to add the selected date to

20 the holiday list-box. If a bank is added with, or is caused to have no holidays through

21 later modification, the system may display a warning to the user. The system may be

22 adapted to store holiday data as global information on the database.

23   The system may permit a payer system administrator to select a "users" 1103

24 function, wherein the system may direct the administrator to an edit user section 1110.

25 In this section, the system may permit the administrator to add, modify or delete users

26 associated with the current payer. At this page, the system may display the name of

27 the payer at the top to establish the context of the edit. The system may populate a list

28 box with the selected payer system's user names. As the administrator clicks on each

29 user, the system may display the user's information in a user information section. The

30 system may permit the administrator to add a new user to the current payer by

31 entering information into the user information section. The system may require that

1   the combination of last name, middle initial and first name be unique. The system may

2   permit modify and delete operations to be performed on the currently selected user.

3   The system may provide a checkbox for temporarily deactivating a user. Contact

4   information (which the system may be adapted to store as global information on the

5   database) may be maintained, including, e.g., last name, first, middle, phone, fax, e-

6   mail, e-mail2, user ID, password and confirmation. The system may require certain

7   fields for user information, such as last name, first name, e-mail and phone. The

8   system may provide a reset password button for resetting the selected user's

9   password to the default setting. The system may automatically send an e-mail to a

10   new user after they have been added, telling the user that they have 24 hours to log in

11   and change their password or the account will be disabled (e.g. where the password is

12   set to the default of user's last name; the system may permit accounts to be re-

13   enabled by a payer system administrator). The e-mail may also tell the user how to

14   connect and logon to the system. The system may provide an "assigned billers"

15   button for accessing the edit assigned billers page 1111, where the administrator may

16   assign billers to the current user. At this page, the system may display the name of the

17   payer and user at the top to establish the context of the edit. At this page, the system

18   may display a list-box that contains all billers currently assigned to the current user

19   and a list-box that contains all billers currently not assigned to the current user. The

20   system may provide two buttons to allow billers to be added or removed from the

21   assigned list. The system may provide a "permissions" button for permitting access to

22   the permissions page 1112, wherein the system may permit a user's permission scope

23   to be narrowed to an organizational subset of the assigned biller. At this page, the

24   system may allow the administrator to modify permissions associated with the current

25   user. At this page, the system may display the name of the biller and user at the top to

26   establish the context of the edit. At this page, the system may display a list of

27   permissions available to the currently selected user. The system may determine the

28   permissions available by the permissions available to the current administrator.

29   Permissions (which the system may be adapted to store as global information on the

30   database) may be inherited. The system may display in a list of permissions the

31   organizational defined nodes. A single node may be assigned to the user. By default, a

1   user may have full permissions. The system may permit the desired permission set to

2   be selected for the user and then saved with a "save" button. The system may provide

3   a "cancel" button for exiting and discarding all changes. The system may provide a

4   number of pre-defined payer privilege profiles to simplify the security model. The

5   system may permit the administrator user to choose one of these to give a new user a

6   particular set of permissions. From there, the system may allow permissions for that

7   user to be altered. Exemplary pre-defined payer privilege profiles (which may be

8   stored as global information on the database) may include:

9   •   Security Administrator: May have all payer profile and administration

10   permissions, including the ability to set-up and delete ID's, bank accounts and

11   the payer profile itself. The system may not allow this ID to be connected to any

12   billers or any processing permissions. The system may permit this ID access to

13   the security administration report only. The system may permit this ID only to be

14   set-up by the system SuperUser.

15   •   Receiving Supervisor: May be provided with a button called "adjust an invoice".

16   With this new button, the system may permit a receiving administrator to be

17   able to review an invoice and make changes. However, the system may restrict

18   change permissions to quantity adjustments only. The system may link or map

19   this type of ID to an individual biller or group of billers.

20   •   Purchasing Manager: May be provided with the buttons for list all invoices;

21   approve invoices (keeping all adjustment capabilities intact); pending payments

22   without the cancel payment privilege; invoice history and biller directories. The

23   system may permit all these permissions to be filtered by biller if the ID were

24   assigned to a particular biller or subset of billers.

25   •   Payables Administrator: May have permissions for initiate payments, with one

26   new feature, the ability to create a general invoice adjustment only prior to

27   creating a payment order; pending payments without the cancel payment

28   privilege and payment history. The system may permit all these buttons to be

29   filtered by bank account and biller if the ID were assigned to a particular subset

30   of bank accounts and/or billers. The system may assign this ID the following

31   reports: return items.

1 • Payables Manager: May have permissions for authorize payments; pending
2   payments with cancel payment permissions; payment history; invoice history;
3   payer profile and biller directories. The system may allow this role to be filtered
4   using dollar amount and may assign this ID the following reports: return items.
5 • Controller: May have permissions for list all invoices; pending payments without
6   cancel payment permissions; payment history; and invoice history. The system
7   may assign this ID the following reports: cashflow forecasting; outstanding
8   invoices; discount management; adjusted invoice history and security
9   administrator
10 • Cash Manager: May have permissions for pending payments without cancel
11   payment permissions. The system may assign this ID the following reports:
12   cashflow forecasting report.
13 • Payables Systems Administrator: May be responsible for managing the daily
14   file export routine for both unpaid invoices and payments.
15   Upon selection by the payer system administrator of the event e-mails 1104
16 function, the system may redirect the payer system administrator to an event e-mail
17 section 1113. In this section, the system may permit a list of payer system users to be
18 associated with specific system events. Any time one of these specific events occurs,
19 the system may generate an automatic e-mail and send it to the selected list of payer
20 system users. For example, exemplary distribution list choices may include: invoices
21 loaded successfully, invoices approved, payment initiated, payment authorized,
22 payment canceled, and payment completed. The system may display at the this page
23 a list-box that contains all payer system users currently in the selected distribution list
24 and a list-box that contains all payer system users currently not in the selected
25 distribution list. In one embodiment, the system may provide two buttons to allow users
26 to be added or removed from the distribution list. The system may allow a default e-
27 mail address to be set up for each event, e.g. the payer system administrator.
28   Selecting edit biller agreement 1105 may cause the system to direct the payer
29 system administrator to an edit biller agreement page 1114, from which the payer
30 system administrator may access such exemplary pages as biller organization 1115,
31 options 1116, and biller e-mail 1117.

1   The system may provide a biller organization page 1115 to address the

2   enterprise organizational model, the goal being to simulate the business structure of

3   an enterprise so that the proper people can have access to and see the appropriate

4   information. Although business organizations are hierarchical by definition, this

5   structure may be too complex for the intended system implementation. Moreover,

6   much of what makes up an organizational hierarchy is not passed as an attribute of an

7   invoice transaction. Instead, what may be implemented supports the specificity of the

8   hierarchical organization, while at the same time assuming no structure. For example,

9   a biller organization might consist of company, department, region, division or store

10   units. Assuming that these fields are populated within the invoice transactions of the

11   system, the system may permit permission sets to be defined, each permission set

12   being for assigning and establishing data access rights to specific users. Each

13   permission set may contain one or more uniquely defined combinations. Three

14   exemplary permission sets might be: Set #1 (Store #1, Store #2, Store #3); Set #2

15   (Store #4, Store #5, Store #6); and Set #3 (Division #1, Division #2). At the biller's

16   organization page, the system may display a list-box containing all the billers related to

17   the current payer. The system may pre-select by default the most recently selected

18   biller in this session. If no biller has previously been selected, then the system may not

19   pre-select any biller from the list-box. For the selected biller, the system may display

20   the list of defined organizational elements or permission sets. The system may provide

21   buttons to add, remove and modify an entry, and may further provide an edit control to

22   allow editing of the name of the entry. The system may display a second list-box

23   containing the specific data values that make up the organizational element for the

24   selected biller. A data value may be made up of the field identifier and the field value.

25   The system may provide a combo-box that allows the user to select the field identifier,

26   and the system may provide an edit control to allow the user to enter the field value.

27   The system may provide buttons to add, remove and modify an entry from this list.

28   The system may be adapted to store biller organization data as global information on

29   the database.

30   Selecting the options function may cause the system to allow the payer system

31   administrator to establish options for a specific biller using a biller options page 1116.

1   At the biller options page, the system may display a list-box containing all the billers

2   related to the payer. The system may pre-select by default the most recently selected

3   biller in this session. If no biller has previously been selected, the system may not pre-

4   select any biller from the list-box. For the selected biller, the system may display the

5   biller options. Exemplary biller options may include: payment methods and account.

6   Selecting the biller e-mail function may cause the system to allow the payer

7   system administrator to associate a list of payer system users with a specific biller

8   using a biller e-mail page 1117. At the biller e-mail page, the system may display a

9   list-box with all the billers related to the payer. The system may pre-select the most

10   recently selected biller in this session by default. If no biller has previously been

11   selected, the system may not pre-select any biller from the list-box. For the selected

12   biller, the system may display at this page a list-box that contains all payer system

13   users currently related to the biller and a list-box that contains all payer system users

14   currently unrelated to the biller. The system may provide two buttons to allow users to

15   be added or removed from the related list. The system may be adapted to store the

16   foregoing associations as global information on the database.

17   The system may provide a password change button 1106, for directing the

18   payer system administrator to a password change section 1120 for changing password

19   information.

20   **Alternative Embodiments**

21   It will be appreciated by those skilled in the art that although the functional

22   components of the exemplary embodiments of the system of the present invention

23   described herein may be embodied as one or more distributed computer program

24   processes, data structures, dictionaries or other stored data on one or more

25   conventional general purpose computers (e.g. IBM-compatible, Apple Macintosh,

26   and/or RISC microprocessor-based computers), mainframes, minicomputers,

27   conventional telecommunications (e.g. modem, DSL, satellite and/or ISDN

28   communications), memory storage means (e.g. RAM, ROM) and storage devices (e.g.

29   computer-readable memory, disk array, direct access storage) networked together by

30   conventional network hardware and software (e.g. LAN/WAN network backbone

31   systems and/or Internet), other types of computers and network resources may be

1   used without departing from the present invention. One or more networks discussed

2   herein may be a local area network, wide area network, internet, intranet, extranet,

3   proprietary network, virtual private network, a TCP/IP-based network, a wireless

4   network, an e-mail based network of e-mail transmitters and receivers, a modem-

5   based telephonic network, an interactive telephonic network accessible to users by

6   telephone, or a combination of one or more of the foregoing.

7   The invention as described herein may be embodied in a computer residing on

8   a network transaction server system, and input/output access to the invention may

9   comprise appropriate hardware and software (e.g. personal and/or mainframe

10 computers provisioned with Internet wide area network communications hardware and

11 software (e.g. CQI-based, FTP, Netscape Navigator^{TM} or Microsoft Internet Explorer^{TM}

12 HTML Internet browser software, and/or direct real-time TCP/IP interfaces accessing

13 real-time TCP/IP sockets) for permitting human users to send and receive data, or to

14 allow unattended execution of various operations of the invention, in real-time and/or

15 batch-type transactions. Likewise, the system of the present invention may be a

16 remote internet-based server accessible through conventional communications

17 channels (e.g. conventional telecommunications, broadband communications, wireless

18 communications) using conventional browser software (e.g. Netscape Navigator^{TM} or

19 Microsoft Internet Explorer^{TM}). Thus, the present invention may be appropriately

20 adapted to include such communication functionality and internet browsing ability.

21 Additionally, those skilled in the art will recognize that the various components of the

22 server system of the present invention may be remote from one another, and may

23 further comprise appropriate communications hardware/software and/or LAN/WAN

24 hardware and/or software to accomplish the functionality herein described.

25   Each of the functional components of the present invention may be embodied

26 as one or more distributed computer program processes running on one or more

27 conventional general purpose computers networked together by conventional

28 networking hardware and software. Each of these functional components may be

29 embodied by running distributed computer program processes (e.g., generated using

30 "full-scale" relational database engines such as IBM DB2^{TM}, Microsoft SQL Server^{TM},

31 Sybase SQL Server^{TM}, Oracle 7.3^{TM}, or Oracle 8.0^{TM} database managers, and/or a

1 JDBC interface to link to such databases) on networked computer systems (e.g.

2 comprising mainframe and/or symmetrically or massively parallel computing systems

3 such as the IBM SB2 ™ or HP 9000 ™ computer systems) including appropriate mass

4 storage, networking, and other hardware and software for permitting these functional

5 components to achieve the stated function. These computer systems may be

6 geographically distributed and connected together via appropriate wide- and local-area

7 network hardware and software. In one embodiment, program data may be made

8 accessible to the user via standard SQL queries for analysis and reporting purposes.

9 　　　　Primary elements of the invention may be server-based and may reside on

10 hardware supporting an operating system such as Microsoft Windows NT/2000™ or

11 UNIX. Clients may include a PC that supports Apple Macintosh ™, Microsoft Windows

12 95/98/NT/ME/2000 ™, a UNIX Motif workstation platform, or other computer capable of

13 TCP/IP or other network-based interaction. In one embodiment, no software other

14 than a web browser may be required on the client platform.

15 　　　　Alternatively, the aforesaid functional components may be embodied by a

16 plurality of separate computer processes (e.g. generated via dBase ™, Xbase ™, MS

17 Access ™ or other "flat file" type database management systems or products) running

18 on IBM-type, Intel Pentium ™ or RISC microprocessor-based personal computers

19 networked together via conventional networking hardware and software and including

20 such other additional conventional hardware and software as may be necessary to

21 permit these functional components to achieve the stated functionalities. In this

22 alternative configuration, since such personal computers typically may be unable to

23 run full-scale relational database engines of the types presented above, a non-

24 relational flat file "table" (not shown) may be included in at least one of the networked

25 personal computers to represent at least portions of data stored by a system according

26 to the present invention. These personal computers may run the Unix, Microsoft

27 Windows NT/2000 ™ or Windows 95/98/ME ™ operating systems. The aforesaid

28 functional components of a system according to the present invention may also

29 comprise a combination of the above two configurations (e.g. by computer program

30 processes running on a combination of personal computers, RISC systems,

31 mainframes, symmetric or parallel computer systems, and/or other appropriate

1   hardware and software, networked together via appropriate wide- and local-area

2   network hardware and software).

3   A system according to the present invention may also be part of a larger

4   computerized financial transaction system comprising multi-database or multi-

5   computer systems or "warehouses" wherein other data types, processing systems

6   (e.g. transaction, financial, administrative, statistical, data extracting and auditing, data

7   transmission/reception, and/or accounting support and service systems), and/or

8   storage methodologies may be used in conjunction with those of the present invention

9   to achieve an overall information management, processing, storage, search, statistical

10   and retrieval solution for a particular lock box service provider, e-payment warehouser,

11   biller organization, financial institution, payment system, commercial bank, and/or for a

12   cooperative or network of such systems.

13   In one embodiment, source code may be written in an object-oriented

14   programming language using relational databases. Such an embodiment may include

15   the use of programming languages such as C++. Other programming languages

16   which may be used in constructing a system according to the present invention include

17   Java, HTML, Perl, UNIX shell scripting, assembly language, Fortran, Pascal, Visual

18   Basic, and QuickBasic. Those skilled in the art will recognize that the present

19   invention may be implemented in hardware, software, or a combination of hardware

20   and software.

21   The translation or mapping of EDI-type financial data, particularly of the X12,

22   UN/EDIFACT, and NACHA formats, as discussed herein, is provided herein only as an

23   example of transaction data capable of interacting with the invention and should not be

24   construed so as to limit the use of the invention solely in such a setting. While the

25   discussion herein presumes the use of the invention with respect to EDI, transactional,

26   or financial data, it is anticipated that the invention may have utility in other contexts,

27   as well.

28   Payment options such as ACH debits, credit or procurement card payments,

29   and/or paper checks may be provided. For ACH debits, a 24 hour settlement window

30   may be required, in which case the payment must be sent to the receiving financial

31   institution 24 hours prior to the settlement date specified by the payer system user. If

1   an ACH debit fails, an ACH return file may be sent from the financial institution, in

2   which case the file is loaded and each transaction may be matched against invoices

3   with the status of paid. When there is a match, the invoice in question may be

4   reopened and rolled back to the status of "verified". Paper checks may be generated

5   internally or by an external software module, wherein an output file in a format capable

6   of being read by the external module may be generated. Payment by a payer system

7   user using a credit or procurement card may also be effected, to be processed by

8   internet or other means. In this scenario, additional security levels may be included,

9   e.g., for initiating credit card payments (along with a dollar amount limit) and approving

10 credit card payments, and such appropriate credit card payment processing

11 functionality as may be appropriate may be included, as well.

12   It should also be appreciated from the outset that one or more of the functional

13 components may alternatively be constructed out of custom, dedicated electronic

14 hardware and/or software, without departing from the present invention. Thus, the

15 present invention is intended to cover all such alternatives, modifications, and

16 equivalents as may be included within the spirit and broad scope of the invention as

17 defined only by the hereinafter appended claims.

18   It should be recognized by those skilled in the art that the present invention may

19 have utility in contexts other than invoice payment, and that the parties to transactions

20 handled by the invention may be entities other than payers and billers/payees in a

21 vendor/vendee context. For example, the invention may be used in bank-to-bank

22 transactions, bank-to-consumer transactions, consumer-to-consumer transactions,

23 and any other financial transactional setting.

24   Exemplary message definitions and corresponding business objects in one

25 embodiment of the invention are listed in the table below along with a brief description

26 of the functions performed by each, wherein exemplary business objects include

27 AccountMgr, Adjustment, Agreement, Audit, ErrorHandler, FileExport, FinInstMgr,

28 GetFinTrans, GetInvoices, GetPayments, HolidayMgr, InvoiceInfo, LoginManager,

29 MsgManager, and MsgUtils:

Message	Business Object	Description
AddAccount	AccountMgr	Adds account to a given financial institution.
DeleteAccount	AccountMgr	Delete account(s) from financial institution.
GetAccountFinInst	AccountMgr	Retrieves financial institution according to account ID.
UpdateAccount	AccountMgr	Update a financial institution's account information.
AssignBillerAdjustmentCodeList	Adjustment	Take in either a list of Adjustment Code Ids or a set of AssignBillerAdjustmentCode messages and add the whole list to the biller ID provided
RemoveBillerAdjustmentCodeList	Adjustment	Take in either a list of Biller Adjustment Code Ids or a set of RemoveBillerAdjustmentCode messages and remove the whole list from the biller ID provided
AssignPayerAdjustmentCodeList	Adjustment	Take in either a list of Adjustment Code Ids or a set of AssignPayerAdjustmentCode messages and add the whole list to the payer ID provided
RemovePayerAdjustmentCodeList	Adjustment	Take in either a list of Payer Adjustment Code Ids or a set of RemovePayerAdjustmentCode messages and remove the whole list from the payer ID provided
GetPayerAdjustmentCodeList	Adjustment	Return a PayerAdjustmentCodeList of all codes assigned to the payer for a given biller
GetAdjustmentCodeList	Adjustment	Return an AdjustmentCodeList of all codes that are non-biller specific
AddAdjustmentCode	Adjustment	Add a new adjustment code
DeleteAdjustmentCode	Adjustment	Delete an existing adjustment code. Does not check to see if assigned anywhere else, does not update biller/payer adjustment code tables
UpdateAdjustmentCode	Adjustment	Update an adjustment code specified by ID
GetGeneralAdjustmentList	Adjustment	Get a GeneralAdjustmentList of all general adjustments for the given Invoice ID
AddGeneralAdjustment	Adjustment	Add a general adjustment for a given invoice ID, update the agreement counters, and mark the invoice as having been adjusted
UpdateGeneralAdjustment	Adjustment	Update a general adjustment for a given invoice ID, update the agreement counters, and mark the invoice as having been adjusted
DeleteGeneralAdjustment	Adjustment	Delete a general adjustment for a given invoice ID, update the agreement counters, and check if there are still adjustments for this invoice, else unmark the invoice as having been adjusted
GetLineItemAdjustmentList	Adjustment	Get a LineItemAdjustmentList for a given LineItemDetail
AddLineItemAdjustment	Adjustment	Add a new LineItemAdjustment to the given LineItemDetail by the ID

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		provided and update the agreement counters and the grossAdjustedTotal amount and the adjusted flag on the invoice
DeleteLineItemAdjustment	Adjustment	Delete a LineItemAdjustment from the given LineItemDetail by the ID provided and update the agreement counters and the grossAdjustedTotal amount and the adjusted flag on the invoice
UpdateLineItemAdjustment	Adjustment	Update a LineItemAdjustment for the given LineItemDetail by the ID provided and update the agreement counters and the grossAdjustedTotal amount and the adjusted flag on the invoice
AssignPayerAdjustmentCode	Adjustment	Assign an AdjustmentCode to the given payer Id while also providing the biller ID
RemovePayerAdjustmentCode	Adjustment	Remove an adjustment code from a payer using the given PayerAdjustmentCode ID
GetBillerAdjustmentCodeList	Adjustment	Get a BillerAdjustmentCodeList by the provided biller ID
AssignBillerAdjustmentCode	Adjustment	Assign / Create an adjustment code for a biller. If an adjustment code is provided, it is assumed to be accurate and the relation is set up in the BillerAdjustmentCode table. If there is no adjustment code ID provided, the info for creating one can be provided for a biller-specific adjustment code and it will establish the relation in BillerAdjustmentCode and the entry in AdjustmentCode
RemoveBillerAdjustmentCode	Adjustment	Remove an adjustment code from a biller. If it is a biller-specific code, also remove it from the AdjustmentCode table
UpdateBillerAdjustmentCode	Adjustment	Update the values in an existing BillerAdjustmentCode
DisplayAdjCode	Adjustment	Get adjustment codes for any biller or agreement
AddAgreement	Agreement	Add an agreement for a biller and payer ID combo to the system. Must have a biller ID, payer ID, customer number, and biller number
DeleteAgreement	Agreement	Remove an agreement for a biller and a payer from the system
UpdateAgreement	Agreement	Update the values in an agreement
GetPayersForBillerNumber	Agreement	Get all of the Payers with agreements for this biller number
GetNonPayersForBillerNumber	Agreement	Get all of the Payers who do not have agreements with this biller. number
GetPayersForBillerID	Agreement	Get all of the Payers with agreements for this biller ID
GetNonPayersForBillerID	Agreement	Get all of the Payers who do not have agreements with this biller ID
GetBillersForPayerID	Agreement	Get all of the Billers with agreements for this payer ID
GetNonBillersForPayerID	Agreement	Get all of the Billers who do not have agreements with this payer ID
DeleteAgreementList	Agreement	Remove the agreements for the list of agreement IDs provided
GetAgreementList	Agreement	Get agreement list based on any filter
GetPayerAgreementList	Agreement	Returns InvoiceReviewUI Entity with payer and agreement info
GetBillerAgreementList	Agreement	Returns InvoiceReviewUI Entity with biller and agreement info

AddAuditMsgBulk	Audit	Takes a list of audit messages and inserts them into the database. Note audit messages can be of type: GENERAL, SYSTEM, SECURITY.
AddAuditMsg	Audit	Adds an audit message to the database. Note audit messages can be of type: GENERAL, SYSTEM, SECURITY.
DeleteAuditMsg	Audit	Deletes an audit message from the database.
GetAuditMsgList	Audit	Gets a list of audit messages from the database
PostErrorMsg	ErrorHandler	Post an error message via the Selector.
PostError	ErrorHandler	Posts an error message directly, without a call through the Selector. The function uses ADO to access the database, instead of the standard engine calls.
ExportUnapprovedInvoicesToCSVFile	FileExport	Exports a list of unapproved invoices to character delimited file format.
ExportUnauthorizedPaymentsToCSVFile	FileExport	Exports a list of unauthorized payments to a character delimited file format.
ExportUnapprovedInvoicesToXMLFile	FileExport	Exports a list of unapproved invoices to an XML file.
ExportUnauthorizedPaymentsToXMLFile	FileExport	Exports a list of unauthorized payments to an XML file.
AddFinInst	FinInstMgr	Adds a financial institution to the system.
DeleteFinInst	FinInstMgr	Deletes a financial institution from the system.
UpdateFinInst	FinInstMgr	Updates a financial institution.
GetFinInstList	FinInstMgr	Retrieves a financial institution list for a given biller, or payer.
DisplayAccount	FinInstMgr	Get account lists for any filter
DisplayBankList	FinInstMgr	Get current bank info
GetFinTranList	GetFinTrans	Get a FinTranList. Can either provide where and orderby info or a list of FinTran Ids
GetFinTran	GetFinTrans	Get a specfic FinTran by ID
GetFinTranReviewList	GetFinTrans	A light UI based method for getting FinTrans with a single invoice and

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		payment
GetInvoiceList	GetInvoices	Get an InvoiceList. Can either provide where and orderby info or a list of Invoice Ids
GetInvoicesForPayment	GetInvoices	Get an InvoiceReviewUIList for a given paymentId
GetInvoiceHistory	GetInvoices	Get a FinTranList for payments which were batched more than 60 days ago, then display the invoices for them
GetInvoiceReviewList	GetInvoices	Get a InvoiceReviewUIList. Can either provide where and orderby info or a list of Invoice Ids
GetInvoice	GetInvoices	Get a specific Invoice by ID
GetPaymentReviewList	GetPayments	Get a PaymentReviewUIList. Can either provide where and orderby info or a list of Payment Ids
GetPaymentList	GetPayments	Get a FinTranList. Can either provide where and orderby info or a list of Payment IDs. Used FinTranList so Xpath filter could work against any criteria under it
GetPaymentHistory	GetPayments	Get a FinTranList for payments which were batched more than 60 days ago, then display the payments for them
AddHoliday	HolidayMgr	Adds a holiday to a specified financial institution.
UpdateHoliday	HolidayMgr	Updates a holiday entry in the database with new information.
DeleteHoliday	HolidayMgr	Removes a holiday from a financial institution.
GetHolidayList	HolidayMgr	Gets a list of holidays for a given financial institution.
ValidateSettlementDate2	HolidayMgr	This function can be called directly from any component without the Selector. It takes a date, and a financial institution ID. If the date is a holiday or a weekend then the next possible workday is returned. Otherwise the original date is returned in string form.
ValidateSettlementDate	HolidayMgr	If the date is a holiday or a weekend then the next possible workday is returned. Otherwise the original date is returned in the XML message parameter.
GetInvoiceCountsForUser	InvoiceInfo	Get invoice counts for the following: Invoices due today, Invoices due tomorrow, Invoices that lose discount today, Invoices that lose discount tomorrow, and Invoices that are past due. Uses the stored proc GetInvoiceInfo and passes back the counts and the Xpath to select the data set which is placed in the payer front screen hyperlinks for the counts
GetInvoiceStatusList	InvoiceInfo	Get the InvoiceStatus change entries for a given Invoice ID
AddInvoiceStatus	InvoiceInfo	Add a new InvoiceStatus record for an invoice ID
Login	LoginManager	Logs a user into the system, passing it a user name, and password. The user will be authenticated against his/her domain credentials as well as the NetTransact database information.

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Logoff	LoginManager	User logs off according to his/her session ID. A session ID is needed as part of the formal message command.
DispatchMsg	MsgManager	Dispatches a message to the selector. If session information is needed, then the parameters in the original message body are filled in.
GetPayerBillerAdjustmentCodesWithAssigned	MsgUtils	Get a BillerAdjustmentCodeList for the biller supplied, match the PayerAdjustmentCodes for the payer supplied to the BillerAdjustmentCodes and set the assigned attribute on the BillerAdjustmentCodeList where there is a match. Gives a single list for what biller adjustment codes are available and which have been assigned to the payer
GetPayerAdjustmentCodesWithAssigned	MsgUtils	Get all AdjustmentCodes in an AdjustmentCodeList and match the PayerAdjustmentCodes for the payer supplied to the AdjustmentCodes and set the assigned attribute on the AdjustmentCodeList where there is a match. Gives a single list for what adjustment codes are available and which have been assigned to the payer
GetBillerAdjustmentCodesWithAssigned	MsgUtils	Get all AdjustmentCodes in an AdjustmentCodeList and match the BillerAdjustmentCodes for the biller supplied to the AdjustmentCodes and set the assigned attribute on the AdjustmentCodeList where there is a match. Gives a single list for what adjustment codes are available and which have been assigned to the biller

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<u>ABSTRACT</u>

An electronic bill presentment and payment system comprises a billing database for storing billing data representing amounts payable to a billing client from a paying client. An application server receives a plurality of instruction files, each representing a transaction for reading or manipulating billing data, performing the transaction utilizing data included in the instruction file, and providing a data response file complying with a predetermined format. A presentation server is coupled to the application server and includes a document database. The document database includes a plurality of document style sheets, each for presenting response data in a predetermined document format corresponding to one of the clients. The presentation server receives the response file and generates a client document utilizing data extracted from the response file and the document style sheet corresponding to the client.